THE IMPACT OF SOCIAL CAPITAL AND SOCIAL NETWORKS ON TOURISM TECHNOLOGY ADOPTION FOR DESTINATION MARKETING AND PROMOTION: A CASE OF CONVENTION AND VISITORS BUREAUS

BY

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DISSERTATION

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ABSTRACT

Tourism is a growing and significant component of the world economy and competition for tourism revenues is intense. For countries or regions seeking community development through tourism, communication strategies are an essential element of success. The Internet plays an increasingly large role in how we communicate in the 21st century and with the advent of Web 2.0 technologies, travel promotion and information sharing have been irrevocably changed with as yet unknown new advances in development. For the travel industry, which includes many small destination marketing organizations (DMOs), this means those adopting these new communication tools are more likely to gain a competitive advantage or at minimum keep up with competition. Studies of innovation adoption among such small DMOs indicate that they are significantly deficient in adopting Web 2.0 technologies. As it is also known that social capital may play an important role in information diffusion, this research proposed that social capital would be an important asset that helps DMOs gain information that facilitates the adoption of Web 2.0 technology. In other words, this study tried to assess the role of social interactions in technology adoption by DMOs. More specifically, this study addressed three research questions related to the roles of social capital on technology adoption:

a) What are the characteristics of social ties that DMO managers rely on for gaining information relevant to tourism technology?
b) What is the relationship between the characteristics of a DMO manager's social capital (networks) and the DMO's technology adoption?
c) How does social capital affect a DMO's technology adoption process?

As key components of social capital, this study has chosen the most agreed upon and common components of social capital: 'social networks', 'trust (competency trust)' toward

networked people and 'norms (subjective norms)'. 'Social networks' was further specified based on a tie's strength (stronger and weaker ties) and externality (bonding and bridging ties). Besides the three main components of social capital, associational activity (the number of memberships in various voluntary organizations) was also considered as an important social capital-related factor influencing technology adoption.

Based on the roles of social capital in facilitating information gain and encouraging DMO managers' Web 2.0 adoption, the research model for this study proposed that social capital may not only directly, but also indirectly affect DMOs' technology adoption by increasing positive perceptions about, and attitude toward, technology use. To assess direct and indirect roles on technology adoption, the research model was developed by adopting two theoretical models (Theory of Reasoned Action and Technology Acceptance Model) that explain a DMO manager's decision processes for Web 2.0 technology adoption. In the proposed research model, the components of social capital were expected to directly and indirectly influence DMO managers' perceptions (perceived usefulness and ease of use) and attitudes about Web 2.0 technology adoption, which subsequently affects the level of a DMO's actual Web 2.0 use for destination marketing.

The directors from a total of 1,166 DMOs were chosen as key informants for this study whose social ties and attitudes relevant to technology adoption were investigated. A total of 303 responses were obtained for data analysis, and multiple regression was mainly used to address the research questions.

First, the patterns of the DMO directors' social networks were explored. The bridging tie was identified as the dominant tie; that is, it appeared that DMO directors relied more on bridging ties for technology-related information gain. However, when respondents were divided

into three groups according to the level of actual Web 2.0 use, the high adoption group showed that their social networks tended to be composed more of bonding ties than bridging ties. In addition, it appeared that the high adoption group was involved in more associational activity and a higher volume of social networks than the low adoption group.

Regarding the direct impact of social capital on the adoption of Web 2.0 technology by DMOs, this study strongly supported the conclusion that social capital is an influential factor that facilitates the adoption of new technology by DMOs. Except for trust and weaker ties, most social capital variables showed significant effects on the level of DMO Web 2.0 use. The multiple regression analysis also confirmed that although directors' bridging ties also have a significant influence on technology adoption, the effect of bonding ties was stronger than bridging ties.

With regard to the indirect impact of social capital on perceptions about, and attitude toward, using Web 2.0, the findings clearly distinguished the roles of different components of social capital in facilitating technology adoption. Competency trust was identified as an important factor influencing directors' perceptions about Web 2.0 use. In addition, the trust also moderated the effect of bridging ties on perceived usefulness. Importantly, it turned out that the weaker ties themselves did not have a significant effect on perceived usefulness, and an interaction effect with trust was found. That is, directors' weaker ties would be more helpful for increasing perceived usefulness if there is strong trust in their ties' competency as related to technology knowledge. Directors' bridging ties showed a negative impact on perceived usefulness, and through further analysis, this study concluded that excessive dependency on bridging ties would not be beneficial for perceived usefulness. Subjective norms also showed strong influence on both perceived usefulness and perceived ease of use. In addition, it appeared

that directors' attitudes toward using Web 2.0 were largely influenced by subjective norms rather than perceived usefulness and perceived ease of use.

From a theoretical viewpoint, this study provided strong evidence that social capital plays a critical role in technology adoption in the tourism context. As this study distinguished the direct and indirect effects of social capital on technology adoption, the present study is believed to significantly contribute to the advancement of knowledge in innovation and social capital-related literature. From a practical viewpoint, as the findings emphasize the importance of social interactions in information gain and facilitating new technology adoption, meaningful practical implications are suggested to increase chances for DMOs to extend their social networks.

To Father and Mother

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CHAPTER I

INTRODUCTION

1.1 Background

Tourism has become one of the major international trade categories. According to the annual report issued by the World Tourism Organization (UNWTO, 2009), tourism accounts for approximately 30% of the world's exports of commercial services and 6% of overall exports of goods and services; the industry ranks fourth after fuels, chemicals, and automotive products. Moreover, the tourism industry accounts for 10% of the worldwide workforce. Thus, it is no longer surprising that for many countries, especially developing countries, tourism plays a critical role as one of the main income sources, generating much needed opportunities for social and economic development. In terms of the growth of the number of tourists, UNWTO estimated that in 2008, international tourist arrivals reached 922 million, and is expected to reach 1.6 billion by 2020.

With the rapid growth of tourism, competition among tourism destinations at both national and regional levels continues to intensify (Bornhorst, Brent Ritchie, & Sheehan, 2010). Thus, for destination marketing organizations (DMOs), the ability to manage effective marketing tools has become the most important challenge for achieving a competitive advantage. In this regard, most DMOs have adopted information and communication technologies (ICTs) as their main tools for marketing and promotion (Bentley, 1996; Buhalis, 1998, 2002; Hjalager, 2010; Schwanen & Kwan, 2008). The Internet is the fastest growing technology in history and has been the primary source of information for many travelers (Inversini, Cantoni, & Buhalis, 2009). Given that nearly seven-in-ten American travelers now use the Internet for their travel planning (U.S. Travel Association, 2009), the use of ICTs as a marketing tool has become more important

than ever. As a result, not only DMOs but also many other tourism businesses such as travel agencies, airlines, and hotels have competitively enhanced their online marketing.

This phenomenon has been accelerated by the recent advent of Web 2.0 technology as a typical type of ICT which has generated a variety of web-available technologies and enabled internet users' active involvement in the creation and re-use of information.

Web 2.0 technology represents a second phase in Web evolution from Web 1.0 (O'Reilly, 2005), and is often represented by social media, social networking sites, and user-generated content (UGC). For the tourism industry, Web 2.0 technology has benefited both travellers and DMOs.

For travelers, Web 2.0 significantly increases 'their accessibility to a wide range of travel-related information by providing them with countless tools to find information and design their trip (Lee & Wicks, 2010; Sigala, 2008). As Web 2.0 technology allows users to produce their own content and also to re-use content generated by others, travelers now gain travel information not only in the one direction from DMOs to travelers, but also from fellow travelers (Inversini et al., 2009; Lee & Wicks, 2010). In the Web 2.0 era, travelers themselves play the role of co-marketers and co-producers of travel-related content by contributing significantly to the growth of travel information (Sigala, 2007). Due to the active involvement of travelers in the creation of content (e.g., photos, videos, recommendations, etc.), travelers can now easily share and assess the real experience that fellow travelers had. This is especially important when it comes to travel and tourism since travel is an experience-based activity, and such experiences need to be communicated to help travelers plan their trip (Inversini et al., 2009).

DMOs have also benefited from the use of Web 2.0 technology. These days, the online space is a collection of official and unofficial websites that consist mainly of Web 2.0 technologies such as social networks, blogs, and review sites (Anderson, 2006; Inversini et al.,

2009). According to Anderson (2006), official websites of organizations and institutions account for only 20% of public websites on the Internet while social media such as blogs and social networking sites represent the remaining 80%. This may suggest that such unofficial websites compete to engage the traveler's attention (Inversini et al., 2009). Furthermore, a study by Xiang and Gretzel (2010) showed that on Google, the number one search engine, social media sites account for 11% of search results performed with travel-related keywords. Thus, not adopting Web 2.0 technology for destination marketing may result in a considerable loss of potential tourists.

As mentioned, in the Web 2.0 era DMOs are no longer considered to be the only providers of travel information. By using Web 2.0 technology, a DMO can enhance their ability to collect information and provide travelers with a greater amount of travel-related content (e.g., photos and videos of destinations). The increased information effectively leads to greater chances for travelers to find destination' information by increasing traffic to a DMO's official website. In fact, a social media marketing industry report by Stelzner (2010) showed that 85% of business marketers indicate that generating exposure for the business is the number-one advantage of social media marketing. Moreover, as content created in Web 2.0 is easily moved to other sites such as social networking sites and blogs through functions such as embedding, tagging, and linking, destination information can be quickly and efficiently spread.

Importantly, recent growth in the use and advancements of mobile phones (smartphones) and the development of diverse applications is increasing the importance of Web 2.0 in travel promotion and fulfillment. Smartphone applications have also enabled travelers to access a variety of Web 2.0 technologies such as social media and social networking sites as well as reading content and finding location information (Lichtenberg, 2009). As smartphone use

increases along with faster connectivity speeds (Mobile Marketer, 2009), the adoption of Web 2.0 technology is crucial for delivering timely information.

In the future, mobile Web use will outgrow the desktop-based Web (MobileBeyond, 2010). Currently the Web is mostly accessed via a personal computer (PC), but it is predicted that the number of mobile Internet users, 1.6 billion, will exceed PC-based Internet users by 2015 (Wilcox, 2010). An important aspect related to the accelerated growth of mobile Web is that a rising number of smartphone Web browsers are being used to access social media, especially social networking sites (Gonsalves, 2010; InsightExpress, 2010; MobileBeyond, 2010). More specifically, almost one in three smartphone users accessed social networks with their mobile browsers (Gonsalves, 2010). Besides smartphones, the introduction of tablet-like devices (e.g.,iPad, Galaxi Tab, and Kindle) is also accelerating the growth of mobile Web use. Thus, the use of social media for destination marketing will provide DMOs with a powerful marketing tool to reach mobile Web users. In addition, as the mobile Web is a new phenomenon, most official websites of any business need to be re-designed to be easily seen by smartphone users, which may cost some money (MobileBeyond, 2010). However, most content generated by Web 2.0 technology is easily accessed and seen by diverse smartphone applications. Therefore, especially for small to medium-sized DMOs, adopting Web 2.0 technology now will help prepare them for the rapidly growing number of mobile Web users.

For these reasons, it is obvious that DMO managers need to recognize the importance of adopting Web 2.0 technology to meet the needs of sophisticated travelers, and exploit new ways to take advantage of Web 2.0 (Buhalis, 1998; Gretzel, Kang & Lee, 2008; Sigala, 2008). In addition, most Web 2.0 technologies can be implemented for free or at a relatively low cost when compared to hardware-based technologies (e.g., GPS). Therefore, Web 2.0 technology is

especially advantageous for small and medium-sized DMOs in that these organizations have limited financial resources to adopt new technology for destination marketing. However, ironically these advantages and opportunities have also caused new challenges for DMOs (Nielsen & Liburd, 2008). As Web 2.0 technologies have quickly changed and evolved, DMOs have faced the difficulty of keeping track of such fast growing ICTs and then integrating the new features into their marketing strategies (Choi, Lehto, & Oleary, 2007; Gretzel, Kang, & Lee, 2008). Managing ICTs has been consistently cited as one of the most troublesome issues among hospitality and travel organization managers (Hjalager, 2010; O'Connor, 2008). In addition, prior studies repeatedly pointed out the low familiarity that DMOs have with new web-based technologies and their insufficient opportunities to learn them (Adam & Urquhart, 2009; Kothari & Fesenmaier, 2007; Lee & Wicks, 2010; O'Connor, 2008). This indicates that there is a significant need to devise new and improved ways to increase technology-related familiarity among DMOs and their adoption of new technologies by DMOs.

Among a variety of factors influencing an individual or organization, this study focuses on the role and importance of social interactions in adopting new technology by DMOs. In other words, this study introduces the concept of social capital as a means to increase information gain and to lead to Web 2.0 technology adoption. Social capital is widely understood as resources gained through an individual's social relationships, often represented by social networks, norms, and trust (Lin, 2001; Putnam, 2001). As social capital values the outcomes derived from social interactions among people above other interactions, it has been widely applied to many different fields and topics concerning social phenomena.

Tourism takes place in a geographical area where sets of tourism stakeholders and tourists interact and intervene in the tourism activity (Prats-Planagumà & Camprubí, 2009). A

tourism destination is regarded as possessing a relational network between tourists and tourism agents (e.g., local community, private enterprises, public administration, etc). Therefore, the relational aspect is especially important for tourism studies. Given that many tourism studies have focused on more tangible values such as the economic impact of tourism (Jeong, 2008; Jones, 2005; Macbeth, Carson, & Northcote, 2004), involving social capital in tourism research may mean the shift of attention from looking at tangible factors to the invisible nature of not only technology adoption but also tourism-related subjects.

1.2 Problem Statement

Tourism is a growing and significant component of the world economy and competition for tourism revenues is intense. For those seeking community development through tourism, communication strategies are an essential element of success. The Internet plays an increasingly large role in how we communicate in the 21st century and with the advent of Web 2.0 technologies, travel promotion and information sharing have been irrevocably changed with as-yet-unknown new advances in development. For the travel industry, which includes many small organizations, this means those adopting these new communication tools are more likely to gain a competitive advantage. Studies of innovation adoption among such small DMOs indicate that they are significantly deficient in adopting Web 2.0 technologies. It is also known that social capital may play an important role in information diffusion (Bantilan, Ravula, Parthasarathy, & Gandhi, 2006; Braun, 2003; Dakhli & De Clercq, 2004; Doh & Acs, 2010; Huijboom, 2007; Isham, 2002) and this study seeks to assess the role of social interactions in DMOs' adoption of Web 2.0 technology.

1.3 Research Setting and Scope

This study chose American destination marketing organizations represented by Convention and Visitors Bureaus (CVB) as the empirical setting from which generalizable conclusions pertinent to the effects of social capital on information gain and technology adoption can be drawn. In addition, the DMO manager was chosen as a key informant for this study whose social ties and attitudes relevant to technology adoption were investigated. The reasons for choosing the DMO as a research setting and the manager as a key informant for this study will be discussed. In addition, the scope of the tourism technology studied will be explained.

First, with regard to DMOs as a research setting, the DMO is a good example of an organization that suffers from not being able to gain technical support and information relevant to technologies and implementing them (Adam & Urquhart, 2009; Buhalis, 1998; Kothari & Fesenmaier, 2007; Lee & Wicks, 2010; Zach, Gretzel, & Xiang, 2010). In fact, it has been widely claimed that the adoption of ICTs by not-for-profit organizations or government institutions, especially small to medium-sized organizations, is lagging when compared to private business sectors (Huijboom, 2007). The DMO as a typical non-profit organization in a tourism sector is no exception to this problem (Zach et al., 2010).

Second, due to the nature of DMOs as non-profit organizations, the DMO is a good example that contains diverse social relations. As one important role of DMOs is to coordinate the diverse constituent elements of the tourism sector to achieve a single voice for tourism (Bornhorst et al., 2010; Getz, Anderson, & Sheehan, 1998), it is expected that the DMO is involved in various relationships with not only tourism-related businesses (e.g. hotels, restaurants, entertainment businesses, etc.), but also other local sectors such as public administration and local community groups, that consequently help us investigate the effects of diverse relational

ties on technology use. In addition, limited financial resources results in a lack of technology-related educational programs, which may make them involved in more informal relationships for information gain.

The key informant is the manager or director as the representative of the DMO. There are three reasons to select managers as key informants. First, according to the entrepreneurship literature, it is presumed that for small to medium-sized organizations, the personal and social networks of the manager normally coincide with the total network of the organization (Bird, 1989; Presutti, Boari, & Fratocchi, 2007). Second, most CVBs are small-to-medium sized organizations; approximately 70% of American CVBs have less than ten full-time staff members (Gretzel & Fesenmaier, 2002). It is widely accepted that the decision of small-to-medium sized businesses to adopt and use new technologies highly depends on a manager's knowledge and experience (Scott, Baggio, & Cooper, 2008). In a study about innovation in American CVBs' Web marketing, Zach et al. (2010) stressed that the CVB manager or directors' perceptions are valid and effective measures for assessing the degree of innovation. Third, leaders of organizations, in this case the DMO managers, are more likely to carry information from one group or organization to another as part of their organizational duty (Kavanaugh, Reese, Carroll, & Rosson, 2003).

As for tourism technology investigated in this study, only Web 2.0 technology was studied. Web 2.0 technology is defined as "a platform whereby content and applications are no longer created and published by individuals, but instead are continuously modified by all users in a participatory and collaborative fashion" (Kaplan & Haenlein, 2010, p. 61). More detailed descriptions of Web 2.0 technology will be discussed in chapter two.

1.4 Purpose of Study

By emphasizing the roles of social relationships in increasing information gain and leading to a technology adoption decision, the purpose of the present study is to examine the impact of social capital on DMOs' technology use. In other words, this study proposes that the concept of social capital is another important factor influencing DMO managers' knowledge acquisition, perceptions, and attitudes about accepting new technologies, which in turn leads to DMOs' technology adoption. To achieve this goal, this study explores a) patterns of DMO managers' social networks as an important element of social capital, in which DMO managers gain technology-related information, b) the relationships between relational ties and DMOs' technology use, and c) the impact of social capital including managers' social networks on technology adoption processes for their DMO.

Although this study posits that there may be strong relationships between social capital (e.g., DMO managers' relational ties) and the DMOs' technology use, it does not assume that social capital directly affects the decision of a DMO manager's technology adoption. Rather, it is considered an external factor facilitating knowledge acquisition and encouraging the adoption decision, which in turn affects perceptions and attitudes about the decision of technology adoption (note: in this study, knowledge acquisition does not necessarily mean that a DMO manager learns the way to operate Web 2.0 technologies; that is, being aware of the presence and usefulness of new types of Web 2.0 technology itself is also considered as information or knowledge gain). Therefore social capital needs to be incorporated with other theories that can explain technology adoption processes. For this reason, this study adopts two theories that have been used to predict or explain either individual or group technology use: Theory of Reasoned Action (TRA) and Technology Acceptance Model (TAM). Integrating social capital and two

theoretical models, the initial conceptual model for this study is depicted in Figure 1.1 (note: this model will be further specified in following chapters).

In Figure 1.1, social capital manifested as social networks and subjective norms plays a role in influencing a DMO manager's perceptions and attitudes about technology adoption and in turn leads to the decision to adopt. The main emphasis of social capital in Figure 1.1 resides in its ability to a) facilitate a DMO manager's information gain and b) encourage and stimulate technology adoption through social systems such as norms and trust.

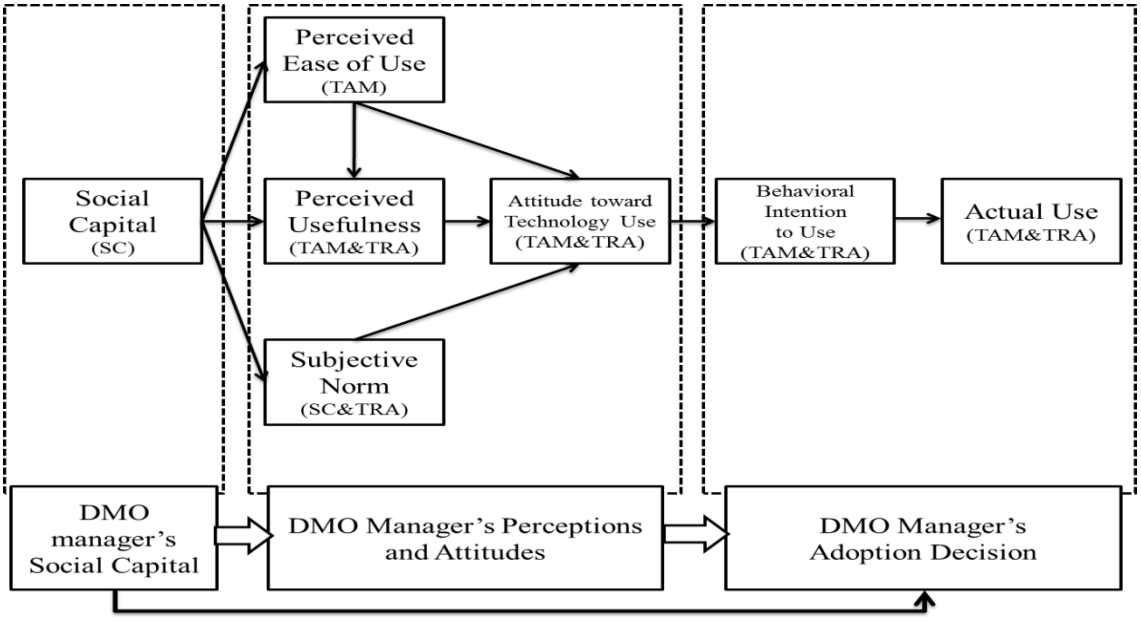

Figure 1.1 **Initial Framework (SC: Social Capital-related factor, TRA: Theory of Reasoned Action, and TAM: Technology Acceptance Model)**

1.5 Research Questions

Consistent with the purpose, this study addresses the following research questions. There is one overarching research question and three primary research questions related to the study purpose:

- Overarching research question: What is the relationship between social capital and

DMOs' technology use?

1. What are the characteristics of social ties (types of social ties, weak/strong and bridging/bonding ties, the size of social networks, and the degree of trust toward each tie) that DMO managers rely on for gaining information relevant to tourism technology?

This research question investigates DMO managers' information sources generated from social networks. It is expected to provide overall patterns and provide a big picture of relational ties where DMO managers gain technology-related information and help (e.g., what are the dominant relational ties that DMO managers mainly rely on, what types of characteristics the ties have, and how closely or weakly the ties are kept for information gain). This information will help to understand the current structure of DMO managers' relational ties, network dependency, and other available relational ties for information gain.

2. What is the relationship between a DMO manager's social capital (networks) and the DMO's technology adoption?

Employing the personal (ego)-network approach where individual social ties of a DMO manager are mainly analyzed, this research question aims to examine the direct relationship between social capital (networks) and DMOs' technology adoption: that is, it tries to identify the types of social capital that are highly valued or related to a DMO's actual technology use. The question would be that if each DMO manager has different relational ties, and the level of their DMO's technology adoption is different, what is the relationship between different types of relational ties and technology adoption? The results from this question are expected to present practical implications for network opportunities in regional tourism development offices. For example, what kinds of programs or activities need to be provided to DMOs as efforts to help develop certain types of relational ties?

3. How does social capital affect a DMO's technology adoption process?

In this research question, integrating social capital theory with technology adoption-related theories, empirical tests are conducted to investigate the impact of social capital on the DMO's technology adoption processes. This test is expected to provide an understanding of what types of relational ties and components of social capital have stronger influences on the process of a DMO's technology adoption. Exploring technology adoption processes and new factors that may influence adoption processes are considered important tasks in that tourism research has only touched the surface of this issue (Hjalager, 2010). The results gained from this question are expected to provide insight into why there are some variations in DMOs' technology adoption and what are some barriers that prevent DMOs from the final decision to adopt new technologies for their organization.

1.6 Significance of the Study and Limitations

In general, this study is significant in that a) it explores the pressing issue of new technology that has become so important for destination marketing, but still its adoption rate and DMOs' familiarity is very low and relatively little attention has been paid to increasing technology adoption in the tourism context in the DMO sector; b) it introduces a relatively new concept, social capital, that has not been rigorously conceptualized in both technology adoption-related research and in the tourism context (Jeong, 2008); and c) it employs new methodological approaches to analyze social networks from which DMO managers gain technology-related information. The emphasis of this study is on its different approach to addressing DMOs' technology use which is expected to suggest valuable practical implications and solutions in which the use of technology by DMOs' can be facilitated. In other words, this study may be very

different from previous studies in that it moves its focus from tangible assets (e.g., funds) to an intangible asset (e.g., social relations) influencing DMOs' technology adoption decisions.

More precisely, this study is expected to make six main contributions. First, DMOs' technology use is relatively low when compared to other private businesses. More attention related to tourism technology adoption should have been given to the DMO but most research has been conducted in hospitality sectors such as hotel or lodging industries and travel agencies (e.g., Beldona, 2008; Cobanoglu, Corbaci, & Ryan, 2001; Ham, Kim, & Forsythe, 2008; Lim, 2010; O'Connor, 2008; Racherla & Hu, 2008) which are mostly private businesses. Since the DMO as a non-profit organization is different from the accommodation industry, including the hotel or lodging industry in terms of its operation system (e.g., main role, financial sources, human resources, etc.), the DMO setting is expected to provide unique findings, and the results will contribute to a body of research on tourism technology adoption.

Second, this study proposes another important component, social capital, that is believed to help DMOs increase their knowledge about new technologies and in turn adopt them for their organization. As the main focus of this study is on the importance of social relations in the process of technology adoption, expected findings will produce significant practical implications that help regional tourism development offices plan strategies to promote DMOs' technology use; so as to organize a variety of activities or practices that facilitate and increase networking opportunities among regional tourism-related members for the purpose of the rapid adoption of new technologies.

Third, as social capital is added to a study concerned with factors influencing technology adoption as well as physical, financial, and human capital, this study will extend existing theoretical models, TAM and TRA, that have been used to explain the technology acceptance

processes. Given that these two models hardly touch the impacts of social networks, involving social capital in the process of technology adoption is expected to provide more sound explanations about the process.

Fourth, not confined to the topic of a DMO's technology use, this study is expected to provide new ways of thinking that can apply to diverse tourism-related topics. Although the introduction and acceptance of the concept of social capital in various academic disciplines has been significant, with some notable exceptions (e.g., Jeong, 2008; Jones; 2005) the concept has not gained comparable attention in the tourism context. With the concept of social capital, an individual's relationships alone are considered valuable resources, and thus, resources (e.g. information) gained through social relationships will become important assets and criteria to assess the success of any tourism-related topic. In this sense, this study helps scholars in the tourism context extend their own topics by taking into consideration the impact of social relationships.

Fifth, with regard to methodology, this study employs personal network analysis to explore variations in DMO managers' social networks where technology-related information originates. In general, there have been two different methods for social network analysis: a) egocentric or personal network analysis where an individual's relational tie and its characteristics and patterns are investigated in detail, and b) whole network analysis that focuses more on the relationships among members of a population and their network structures or configuration (e.g., a network's centrality, betweens, and closeness). Although there have been several tourism studies that employed whole network analysis (e.g., Bhat & Milne, 2008; Jeong, 2008; Scott et al., 2008), up until now no studies in the tourism context have tried to adopt the egocentric (personal) network for social network analysis. Therefore, it is expected that this study will

contribute to a methodological understanding of the analysis of social relationships in the tourism context.

Sixth, in terms of contributions to other fields, the tourism industry is different from other business sectors in that in most cases an individual business alone could not be a destination. The tourism destination involves a co-operative body as well as individual business competition (Grängsjö & Gummesson, 2006). In a destination, each individual tourism business competes with another, and at the same time, they are obliged to literally co-operate with their competitors (Dredge, 2006; Scott et al., 2008). Given that the concept of social capital and social network analysis is a relatively new approach in the tourism literature (Bhat &Milne, 2008; Jeong, 2008; Scott et al., 2008), the very nature of the tourism industry is expected to uniquely impacts and provide patterns of social networks for knowledge gain and technology adoption in comparison to other traditional business contexts. For example, most businesses do not share their marketing or promotion strategies with their competitors, and find information mainly from other areas or experts. However, because of the importance of cooperation in tourism, it may be possible that DMOs find useful information from their tourism partners.

It is worthwhile to note several limitations present in the conducting of this study. In terms of concerns relevant to methods employed for social network analysis, there have been common problems. First, 'recall bias' should be noted because the survey was self-reported. This study asked respondents to list all their relational ties that help them gain technology-related information. However, many scholars have questioned whether respondents accurately report their relational ties since recalling their past relationships requires a relatively high cognitive ability (Hammer, 1984; Jeong, 2008). However, Jeong (2008) and other scholars (e.g., Freeman & Romney, 1987; Hammer, 1984) argued that "main focus of network scholars research interest

relies on the patterns of the network structure, relatively stable patterns of interactions, and not the particular interactions of individuals" (p.116). This study also supports this argument since it is more interested in the patterns and characteristics of the three most influential ties of DMO managers among their total ties. It was anticipated that respondents would be able to remember their several influential ties, and that the recall bias would be minimized in this study.

The second common concern was in the length of the questionnaire designed for examining relational ties. Basically, as respondents were asked to list their influential relational ties and then to identify the multiple types of ties with each person on the roster, the process usually took longer than normal research questionnaires. This can cause respondents to easily fatigue from long lists of names and provide inaccurate responses. To minimize this problem, testing questionnaires with a preliminary group is strongly suggested. From the pre-test, first, some questions can be consolidated or deleted. Second, if the questions are still long, it may become necessary to divide the survey into two parts, and conduct the study in different time periods.

In terms of technology adoption processes, since innovations like new technology adoption usually take time, a time lag needs to be considered between observing the factors of social capital and observing technology use (Daklhi & De Clercq, 2004; Kassa, 2009). Therefore, it is desirable to use the data related to technology adoption (e.g., the number of actual technologies adopted) two or three years later than the observation of social capital factors. Due to time constraints, this study was unable to use this desirable method. However, it is expected that the time lag will minimally affect the results in that as the stock of social capital does not change rapidly, it is possible that the results are not significantly influenced by the time lag (Hauser, Tappeiner, & Walde, 2007; Kassa, 2009).

Regarding measurement, this study assumed that DMO managers' social networks would increase the level of knowledge about new technologies. However, as shown in the initial conceptual model, objective levels of DMO managers' knowledge are not measured in this study because of the difficulty in developing objective criteria to measure them. Therefore, this study does not provide objective results about whether certain managers actually have higher levels of knowledge about Web 2.0 technology in comparison to other managers. However, it is assumed that as higher perception or awareness about the usefulness of new technologies may have a strong relationship with the level of actual knowledge, to a large extent the subjective measures may reflect the level of DMO managers' actual knowledge.

As will be discussed in the method section in detail, this study mainly utilizes quantitative methods, which brings with it some limitations. By relying mainly on a quantitative approach, this study may miss other important aspects related to social capital and DMOs' technology adoption. First, this study may not be able to consider contexts where diverse social relations exist. The most common criticism about quantitative methods may be that the approaches neglect the reality of situations. Social relations are formed in various contexts and situations. Simply controlling some of the variables statistically, which aims at holding different situations equally (e.g., income, position, the number of employees, or etc.) cannot fully consider dynamic situations relevant to social relations. If certain types of relational ties are critical for a DMO's technology adoption, knowing how the ties began, developed, and were maintained may be equally important, but the quantitative method may not be able to capture these processes.

Finally, this study may not be able to identify potential factors or new themes affecting DMOs' technology adoption. One of the advantages of the qualitative approach is in its ability to explore themes and new factors that have not been found in previous studies. Although a

considerable body has examined organizational technology adoption, relatively little attention has been paid to the relationship between social capital and technology adoption (Huijboom, 2007; Huysman & Wulf, 2004). In addition, so far no study in tourism has applied the concept of social capital to DMOs' technology adoption. This may mean that although the study model and variables will be developed based on empirical studies and theoretical background, there still might be some important factors that have not been identified in previous studies and may not be suppressed in a quantitative approach.

1.7 Overview of Remaining Chapters

This study consists of five chapters:1) introduction, 2) literature review, 3) methodology, 4) analysis of results, and 5) discussion and conclusion. Chapter two presents a literature review related to social capital, tourism technology, and the relationship between social capital and technology adoption as well as Web 2.0 technology. Based on the literature review, chapter two also presents the research model to answer the research questions discussed above. Chapter three explains the methodology, including the proposition of hypotheses, questionnaire development, data analysis method, and it describes survey procedures and data collection. Chapter four provides descriptive statistics of collected data and the main analysis, and discusses the results. Finally, chapter five focuses on implications and suggestions based on the data analysis and draws conclusions.

CHAPTER II

LITERATURE REVIEW

2.1 Tourism and Web 2.0 Technology

For this study, tourism technology is confined to web-based technologies. More precisely, only Web 2.0 technologies were investigated. Operation systems (e.g., GDS), tourism-related devices (e.g., smartphones, GPS, or Kiosks) and other useful technologies which are not available on the Web are excluded in this study. Unarguably, the Internet has been one of the crucial market communications channels for DMOs, and it became the preferred information source for almost one out of every two travelers (Buhalis & Spada, 2010; Choi et al., 2007). With the emergence of the Internet, a variety of ICTs have been employed, and recently the advent of Web 2.0 has enabled both DMOs and tourists to access and deal with rich travel information in easy and efficient ways (Lee & Wicks, 2010; Schegg, Liebrich, Scaglione, & Ahmad, 2008). Schegg et al. (2008) explained that as travelers are interested and involved in finding multiple ways and information sources to reduce risks and to use their time efficiently, Web 2.0 seems to be crucial in travel planning.

However, not surprisingly, Web 2.0 (or Web 2.0 technology) lacks a widely agreed-upon definition and a clear distinction like other types of technological terms (Murugesan, 2009). Because of this, there have been similar terms related to Web 2.0 such as social media, user-generated content, and social networks (or networking), and these terms are often used interchangeably. Given that the main focus of this study is on Web 2.0 technology, even if clearly defined borders of Web 2.0 technologies are unavailable the range or scope of Web 2.0 technology needs to be defined. Thus, before discussing the usefulness of Web 2.0 technology and applications for destination marketing and promotion, this chapter first tries to define the

concept of Web 2.0 and other similar terms and then tries to specify the range of Web 2.0 technology that were included in this study.

2.1.1 Defining Web 2.0 Technology

The term Web 2.0 was first used in 2004 to describe a new way in which software developers and end-users started to utilize the World Wide Web. Web 2.0 was broadly referred to "as a platform whereby content and applications are no longer created and published by individuals, but instead are continuously modified by all users in a participatory and collaborative fashion" (Kaplan & Haenlein, 2010, p. 61). Kaplan and Haenlein considered Web 2.0 as a platform for the evolution of social media. In General, Web 2.0 contains two perspectives: a) the shift of the paradigm related to Web use, and b) the aspects of technological usages. In other words, Web 2.0 has an ideological and technological foundation.

With respect to the ideological foundation, it is understood not as a brand new technology, but as the second phase in internet evolution from Web 1.0 where users could access content and information mainly from certain official websites (Murugesan, 2009; schegg et al., 2008). Web 2.0 is considered more interactive and dynamic than Web 1.0 as it allows for more active participation in the creation and use of content. Therefore, to indicate Web 2.0's paradigm perspective, 'a Web 2.0 environment', 'Web 2.0 era', 'the age of Web 2.0", or 'in Web 2.0' may be more appropriate expressions. Regarding the second aspect, Web 2.0 represents a collection of new Web-based technologies and applications that have emerged with the evolution from Web 1.0 to Web 2.0 (e.g., interactive maps, social networking sites, rating or recommender sites, etc.). This perspective emphasizes the technological aspects of Web 2.0. In fact, the Web 2.0 era or environment was ignited and facilitated by these Web-based

technologies and applications, and at the same time, diverse Web 2.0 technologies and applications have resulted from and were developed due to the unique Web 2.0 environment. Therefore in this study, a DMO's Web 2.0 technology adoption means that *the DMO employs diverse Web-based technologies and applications for destination marketing that were built within the Web 2.0 environment*.

O'Reilly (2005) mentioned the core competencies of Web 2.0 services: they are not packaged software with cost-effective scalability; they control unique, hard-to-recreate data sources that get richer as more people use them; users are trusted as co-developers; they harness collective intelligence, leveraging the long trail through customer self-service; they exist as software above the level of a single device; and they use lightweight user interfaces, development models, and business models. Murugesan (n.d.) also provided unique characteristics of Web 2.0:

a) facilitates flexible Web design, creative reuse, and updates;
b) provides a rich, responsive user interface;
c) facilitates collaborative content creation and modification;
d) enables the creation of new applications by reusing and combining different applications on the Web or by combining data and information from different sources;
e) establishes social networks of people with common interests; and
f) supports collaboration and helps gather collective intelligence.

More specifically, Cohen (2009) distinguished social media and social networking by its main function. "Social media can be called a strategy and an outlet for broadcasting, while social networking is a tool and a utility for connecting with others" (p. 2). Cohen also explained that both terms together can be lumped under the umbrella of Web 2.0. According to his distinction,

YouTube is firmly a social media website in that it is an outlet for broadcasting, while LinkedIn is a social networking since it is a site for connecting with others. However, Cohen clarified Twitter and Facebook as Web 2.0 websites as they contain both functions of broadcasting and connecting people.

However, distinguishing social media from social networking is somewhat problematic and arguable because currently there are blurry lines between broadcasting and connecting people. As indicated by Paetzold (n.d.), although the extent of the broadcast function and connection varies, most Web 2.0 technologies to some extent contain both functions. For example, even LinkedIn and Flickr now enable people to both connect to others and to share content through the functions of "embedding" or "sharing." In addition, there are some other Web 2.0 technologies and applications which were not originally designed for either connecting people or broadcasting content. For example, collaborative or open source software such as Wiki or Wikitravel, rating or recommender sites (e.g.,Yelp or TripAdvisor), and blogs are mainly developed to provide and share useful information about topics or products by enabling users to add their knowledge, experiences, opinions, and reviews to the sites.

Therefore, it is widely accepted that social media be considered a superordinate technology that encompasses social networking sites and open or collaborative source technologies, and a subordinate technology to Web 2.0 (Cohen, 2009; Easen, 2009; Kaplan & Haelnlein, 2010; Lichtenberg, 2009). That is, social media is regarded as a core of Web 2.0 technology. More specifically, social media is considered a strategy and an outlet for a) broadcasting media content (e.g., video, music, and photos), b) connecting with others, and c) democratization of information (open source). According to its main purpose and function, social media can be divided into three categories: a) media sharing technologies whose main

purpose is to broadcast diverse types of media content, mainly photos (e.g., Flickr) and video clips (e.g., YouTube), b) social networking technologies (or social networking sites) that aim mainly at connecting with people for many different purposes (e.g., sharing information, or building or maintaining relationships), and c) collaborative or open source technologies that share a user's specialty, knowledge, and experiences. However, it is worthwhile to note that although social media is clarified based on its main purpose and function, this study admits that currently many social media-related technologies are multi-functionalized and it is difficult to divide technologies into firmly agreed upon categories.

Social media does not encompass all Web 2.0 technologies. Besides social media, there have been various types of Web 2.0 technologies and applications, and these technologies are clarified in Figure 2.1. In Figure 2.1, Web 2.0 technology includes not only social media but also interactive maps, and other applications. 'Other applications' refers to a technology that facilitates and supports Web 2.0's main functions and purpose. For example, by using a 'tagging' and 'embedding' function or tool, users are able to easily re-use and broadcast certain content. Regarding interactive maps, traditionally geographically linked information for travel planning (e.g., attraction photos or locations of hotels and restaurants) has been provided in the forms of maps on paper, either standard topographical maps or purpose-made products such as guide books (Nielsen & Liburd, 2008). However, the advent of interactive maps such as Google Earth or Maps, Virtual Earth, and Yahoo Maps has enabled tourism businesses and DMOs to locate travel-related information on Web-available maps. Richmond and Keller (2003) and Nielsen and Liburd (2008) stressed that interactive maps are very effective especially in creating an image of a destination, particularly with links to local tourism-related businesses and useful information. Therefore, it is reasonable that an interactive map is considered an important Web 2.0 technology

in this study.

Thus, as in Figure 2.1, Web 2.0 technology is finally partitioned into five categories according to their main functions or purposes: social media which includes a) social networking, b) media sharing, and c) open source; d) interactive or user-friendly maps; and e) a variety of applications or tools.

Figure 2.1 **Web 2.0 Technologies**

Based on the classification, this study re-defined the roles and functions of Web 2.0 technology used in this study:

a) It enables people to be connected for a variety of purposes such as maintaining relationships or information sharing (e.g. social networking sites);

b) It enables broadcasting and sharing of media content (e.g., YouTube, Flickr, etc.)

c) It enables the democratization of information by supporting the creation of collaborative

content among users (e.g., open/collaborative source); and

d) It enables the combinations of different applications on the Web that facilitate and support these functions noted above.

In the next section, the benefits and usefulness of these Web 2.0 technologies and applications for destination marketing and promotion are discussed.

2.1.2 Web 2.0 and Destination Marketing

In searching for travel information people are now turning away from traditional information sources like radio, television, magazines, and newspapers (Mutch, 1993; Nielsen & Liburd, 2008; Parra-López, Bulchand-Gidumal, Gutiérrez-Taño, & Díaz-Armas, n.d.). In the Web 1.0 environment, DMOs and other tourism businesses developed the promotion message and transmitted it to potential travelers who may or may not have been willing participants in the promotion process (Mangold & Faulds, 2009). Moreover, the control over the dissemination of information was in the hands of the marketing organization, and information flow was pretty much one way from DMOs to travelers (Lee &Wicks, 2010). However the Web 2.0 era, which allows broadcasting of content, user-generated content, democratization of information, and social networking, constantly changes the ways of providing information as it enables potential travelers to have more diverse information sources and the ability to control information provided by a variety of media and channels. Their reliance on social media that enables them to have on-demand and immediate access to information at their own convenience constantly increases.

There have been several attempts to introduce diverse Web 2.0 technologies to DMOs and demonstrate their impacts on destination marketing (e.g., Bender, 2007; Lee &Wicks, 2009,

2010; Nielsen & Liburd, 2008; Sigala, 2008). Besides the advantages of Web 2.0 tools for destination marketing, Sigala (2008) stressed Web 2.0's usefulness in customer relationship management (CRM) through virtual communities where social ties between customers and DMOs can be enhanced. In particular, Bender (2007) conducted an extensive review of map-related technologies and showed how other DMOs are using them for destination promotion. Similarly, Nielsen and Liburd (2008) also proposed the usefulness of map-related technologies for the tourism industry. They emphasized that new types of maps within the Web 2.0 environment such as Google Maps and Virtual Earth allow DMOs to link diverse geographical or location-based information on interactive or user-friendly maps, which can play a vital role in travelers' holiday planning from home to on-site. In designing Web 2.0 training programs for DMOs, Lee and Wicks (2010) emphasized that the use of Web 2.0 technology can provide travelers with rich travel information and enables DMOs to have useful resources for monitoring destinations. More specifically, the benefits and usefulness for destination marketing and promotion resulting from using Web 2.0 technology can be clarified in five categories: a) increased information, b) cost effectiveness, c) increased socialization, d) monitoring, and e) increased trust in information.

Increased information.

Traditionally, the flow of information outside of its geographic boundaries was generally confined to face-to face, word-of-mouth communications among individuals, which minimally impacted the dynamics of the marketplace due to its limited dissemination (Lee & Wicks, 2010). However, Web 2.0 technologies have enabled the speedy and efficient delivery of comprehensive destination information without geographical confinement (Choi et al., 2007). As diverse

functions and applications used in the Web 2.0 environment (e.g., "tagging", 'linking', and 'embedding') enable the Internet user to easily move content to many other websites or personal blogs, the re-use and availability of content and information are dramatically increased. This may also mean that the use of Web 2.0 technology will also increase the visibility of information and traffic to DMOs' websites (Gretzel et al., 2008). In Web 2.0, internet users are co-marketers, co-designers, and co-producers of tourism information, generating a considerable amount of content and making information available (Fuchs, Scholochov, & Höpken, 2009; Lee & Wicks, 2010; Sigala, 2007). Thus, due to connections among users and their collaboration in the creation of content, the DMO is no longer considered the only information provider in the Web 2.0 environment.

Increased information also means increased accessibility to information. The power of Web 2.0 technology, especially social media, is in its unique ability to make content available anywhere, anytime, by anyone and to everyone. Through social media, DMOs are able to provide information across multiple platforms, thus increasing chances for travelers to find information provided from DMOs and traffic to their own website. Moreover, by using social media like Twitter or Facebook, DMOs are now able to provide real-time information that occurs at their destination. With the rapid growth of smartphone use, real-time information has become an important source for travelers (King, 2009; Schetzina, 2010). For tourism businesses, social media would be the best place to post a special deal or offer which needs to be changed instantly. For example, the Chicago CVB often posts real-time offers for hotel booking and provides last minute deals for event tickets that were usually not sold out that day. Now that Google, the number one search engine (The Nielsen Company, 2010), has integrated 'real-time search' into its searches, content posted in social networking sites like Twitter or Facebook now shows up on the

page of search results.

Increased socialization.

Web 2.0 enables interactivity among travelers and between DMOs and travelers. DMOs can now talk to their potential and pre-visit travelers through such social media platforms as Twitter, Facebook, and blogs (Mangold & Faulds, 2009). In other words, Web 2.0 allows DMOs to engage travelers' interest and participation by allowing them to interact with Web content rather than simply broadcasting travel information (Doolin, Burgess, & Cooper, 2002). Chung and Buhalis (2008) studied factors influencing Internet users' participation in online travel communities (which is one of the notable travel-related trends in Web 2.0), and revealed that 'social benefits' (referring to communication with other members) is one influential benefit, as well as 'information acquisition' and 'hedonic benefits'. The result may mean that in holiday planning, not only gaining information, but also socialization among fellow travelers who have similar interests are important processes for prospective travelers. Wang and Fesenmaier (2004) concluded that since the so-called CRM solutions focus mainly on the interaction between a company and its customers, they were not able to address the interaction of customer-to-customer, resulting in only a partial picture of customer and partner needs. However in Web 2.0, DMOs can extend interactions among travelers by operating or linking to open spaces where travelers can freely exchange their experience and information (e.g., travel blogs). Wang and Fesenmaier further stressed that this extension of interactions enables travelers to extract more value from DMOs or other tourism businesses with whom they interact. Moreover, direct communication with travelers helps DMOs enhance the 'feel-good' factor, and change the perception related to their destination (Easen, 2009; Mangold & Faulds, 2009). Similarly, Fuchs

et al. (2010) commented that Web 2.0 is now considered as a prerequisite in communicating with customers and partners, which satisfies consumer demand.

Monitoring.

"Conventional marketing wisdom has long held that a dissatisfied customer tells ten people. But that is out of date. In the new age of social media, he or she has the tools to tell 10 million" (Gillin, 2007, p. 4). Web 2.0 enables users to talk to one another about a topic in many different ways, which represents an extension of traditional word-of-mouth communication. Therefore, DMOs need to recognize the power and critical nature of the discussion or reviews being carried out by users in Web 2.0. In particular, since much of the content on rating or recommender sites such as TripAdvisor or Yelp is generally based on travelers' real experiences, their comments and reviews about attractions provide not only DMOs, but also other tourism businesses, great sources for market research and monitoring tourist satisfaction at a destination (Gretzel et al., 2008).

According to Gaming Industry Wire (2010), 41% of leisure travelers and 51% of business travelers make their travel plans according to the reviews they read, which means travelers conduct their travel research via the Internet more than any other source. As an example, Yu (2008) found that Chinese students rely more on BBS (Bulletin Board Systems), one of the most popular social networking sites among Chinese people, than search engines (e.g., Google or Yahoo) or DMOs' official websites while searching for travel information. In addition, more travelers are now posting their own reviews to share with others. In this sense, social media is a very effective way to find out what is being said about destinations that DMOs promote (Easen, 2009). Without conducting traditional surveys, DMOs can get valuable information about their

destination performance from travelers. For example, DMOs look for bad press about their destination to improve problems. Also, negative press that their competitors (e.g., other attractions or DMOs) receive may be useful to see whether they can do better and to prevent similar problems in advance (Easen, 2009). In addition, traffic tracking functions currently provided by most social media are another powerful source for monitoring. Most social networking sites currently enable users to track the actual pass-along of content via search engine, most popular content seen by users, and users' geographical information (e.g., where the user comes from). This means that DMOs can now save considerable time in researching their target market, and they can gain more accurate data about their market than what was gained by traditional research methods.

Cost effectiveness.

A traditional promotional campaign usually involves television, radio, and print, which generally require considerable cost. Thus, these traditional advertising methods may not be suitable for small-to-medium sized organizations with a small budget. A lack of funds is one frequently mentioned barrier that slows DMOs' technology use (Zach et al., 2010). However, perhaps one of the biggest draws of Web 2.0 for destination marketing and promotion is its ability to create far-reaching and relatively inexpensive (for some, no cost) marketing tools (Ammirato, 2010). Web 2.0 technology has been considered a cost-effective marketing tool since a) there is almost no barrier to entry as most sites are free to use; b) it is available on the Web 24 hours a day and 7 days a week; and c) it offers worldwide (unlimited) reach (Easen, 2009; Lee & Wicks, 2010). It would be true that developing and maintaining Web 2.0 technology may cost something, but DMOs may not pay for advertising channels and the dissemination of information.

This makes Web 2.0 not only relevant for large multinational firms, but also for small and medium sized companies, and even nonprofit and governmental agencies.

Increased trust in information.

By using Web 2.0 technology, DMOs can increase the credibility of information. According to the Global Online Consumer Survey conducted by the Nielsen Company (2009), 70% of people trust recommendations posted online and on brand websites. That is, people trust human experiences more than advertisements. This is especially true when it comes to travel since in Web 2.0, most content is generated by and shared among fellow travelers who have experienced or been interested in certain travel products, having no commercial purpose to promote the products (Gretzel et al., 2008; Smith, Menon, & Sivakumar, 2005). In particular, travel information provided by rating or recommender sites is more powerful in affecting travel decisions than a corporate-sponsored link on a search engine or a banner on a website, as travelers become more dependent on feedback from fellow travelers in making their holiday decisions (Easen, 2009; Lee, Wicks, & Huang, 2009). The study by Google and OTX (2009) confirmed that videos created by fellow travelers are looked upon as being more trusted, compared with the videos that companies create. Therefore, it is believed that DMOs can provide travelers with more trusted information and content by creating space (e.g., Facebook) for reviews and discussion about their destination, and by linking to other destination-related content (e.g., YouTube).

2.2 DMOs' Technology Use and the Role of Social Capital

Despite the importance of Web 2.0 technology for destination marketing and promotion, it has been repeatedly noted that most DMOs are still in an early stage in using ICTs including Web 2.0 technology (Lee & Wicks, 2010; Schegg et al, 2008). Schegg et al. (2008) examined the extent to which DMOs and other tourism businesses use Web 2.0 technologies and applications. Their findings confirmed the low presence of Web 2.0 technologies and applications on DMOs websites and indicated that tourism enterprises, particularly small-to-medium sized ones, are at an early stage in understanding and applying the concept of Web 2.0 to their business. Recently, Lee & Wicks (2010) examined the familiarity of DMO employees with diverse Web 2.0 technologies mainly at the manager level. Through a training workshop, they explained and demonstrated the diverse usefulness of Web 2.0 technologies to participants in detail, and surveyed trainees' prior familiarity with, and intention to use, the introduced technologies. Their findings showed that even though their intention to use some Web 2.0 technologies for their organization was relatively high, their familiarity with, or knowledge about, Web 2.0 technologies was still at a very low level, thus hindering DMOs from adopting Web 2.0 technology for their organization.

The low level of DMOs' Web 2.0 technology use was also found in studies that examined the visibility of a DMO's website in search results. Given that more active use of Web 2.0 technology is highly correlated with the visibility of the website (Gretzel et al., 2008), the extent of a DMO website's visibility can provide useful information about the current state of a DMO's Web 2.0 use. Wöber (2006) examined the visibility of DMO websites and individual hotel operations in Europe with six popular search engines. The findings showed that most tourism websites achieved low rankings among the search results. A similar study was conducted

by Xiang, Wöber, and Fesenmaier (2008). Their findings indicated that there are several big players, mainly private tourism businesses, dominating search results pages, which leads to the diminishing visibility of small and medium-sized tourism businesses. Xiang, Pan, Law, and Fesenmaier (in press) also studied the visibility of eighteen American CVB websites on search engine results pages (SERP) and showed that only a limited number of CVB website occurrences were located on the first SERP with travel-related queries.

Although empirical studies testing the actual impact of certain factors on technology use in DMO contexts have not been found, there have been several attempts to understand DMOs' constraints in using new technologies and to provide useful suggestions to increase a DMO's use of available new web-related technologies. Not surprisingly, a lack of funds and skilled employees (O'Connor, 2008; Shapira & Rosenfeld, 1996; Zach et al., 2010), and insufficient learning opportunities (Florida, 1995; Lee & Wicks, 2010; Main, 2002) have often been mentioned as barriers that cause the low implementation level of new technologies. Through Web 2.0 training programs, Lee and Wicks (2010) investigated the DMO's constraints in adopting Web 2.0 technology for destination marketing, and confirmed that lack of money to implement, and time to learn new technologies caused by a lack of employees were the most relevant constraints identified by DMO managers. Thus, in the DMO context, most suggestions to increase technology use and a DMO's familiarity with new technologies have focused on the barriers.

It appears that providing enough training opportunities was the most frequently mentioned suggestion in many studies (e.g., Airey & Middleton, 1995; Gretzel & Fesenmaier, 2004; Main, 2002; Yuan, Gretzel, & Fesenmaier, 2003). Given that formal educational opportunities, including training workshops, can increase a DMO's awareness of and knowledge

gain about new technologies, there is no doubt that more educational programs need to be provided to facilitate and sustain DMOs' technology use. However, it is very challenging for small and medium-sized DMOs to have their own training programs due to the lack of qualified instructors and financial resources (Lee & Wicks, 2009). The lack of funds stops DMOs from hiring experts and offering off-the-job training sessions for their employees, such as workshops and distance learning (Lee & Wicks, 2010; Sigala, Airey, Jones, & Lockwood, 2001). In many cases these suggestions (increasing educational programs, funds, or employees) may be beyond the actual ability of small-to-medium sized DMOs (more specifically, CVBs in this study) which are mostly locally-based. Rather, these suggestions may be effectively implemented by the efforts or policies of DMOs at the state or national level (e.g., Illinois Tourism Development Offices) rather than those at the local level (e.g., a local CVB).

There is a need for empirical studies to provide some practical solutions that can be utilized by each individual DMO at a local level. More importantly, despite DMOs' difficulty in acquiring enough funds and educational opportunities, there have always been variations in terms of the level of technology use among DMOs having a similar amount of annual funds and relatively few employees. The reason is that besides formal education as a typical means to increase human capital and physical capital (e.g., funds, the number of employees, and other infrastructure of organizations), the decision making behind technology adoption is additionally influenced by many other factors (Kaasa, 2007). In fact, because employee levels of knowledge and skills about technology vary, designing and providing technology or computer training to DMO employees are very difficult (Lee & Wicks, 2010). In addition, some DMO employees are often afraid to participate in technology-related programs because of their low level of knowledge and skill. Thus, these reasons may lead to greater dependence of DMO employees on

their social networks to acquire technology-related information or confirm its usefulness.

In fact, technology adoption as an innovation activity needs to be viewed as "the result of a process whose success rests upon the interactions and exchanges of knowledge involving a large diversity of actors in situations of interdependence" (Landry et al., 2002, p. 683). In other words, new technology adoption is "an interactive process involving both formal and informal relationships among various actors interacting through social network" (Doh & Acs, 2010, p. 241). Thus, it may be that a technology adoption decision is closely associated with an individual's social relations or networks. Therefore, the concept of social capital that values social relations as an important resource for achieving certain goals is an applicable concept for explaining the nature of technology adoption with respect to social interactions. More specifically, social capital explains two important aspects for technology adoption decisions which are related to social interactions: a) knowledge gain and sharing through social relations, and b) the role of the social system (e.g., trust and norms) that affects individuals' behavior and decision making.

First, social capital facilitates information sharing and acquisition through social relationships (Adler & Kwon, 2002; Inkpen & Tsang, 2005; Nahapiet & Ghoshal, 1998; Wasko & Faraj, 2005). As an innovation activity, the decision process of new technology adoption is an uncertainty reduction process, and essentially an information seeking and information processing activity (Rogers, 1995). Needless to say, the decision to adopt new technology is strongly related to the acquisition of information and skills about the technology (Adam & Urquhart, 2009). For this reason, providing a formal educational opportunity may play an important role in increasing knowledge and thus reduce uncertainty. However, the knowledge is also obtained and shared from an individual's social network as well as from formal educational systems (Adam &

Urquhart, 2009; Chow & Chan, 2008; Coleman, 1998; Levin & Cross, 2004; Wasko & Faraj, 2005).

Research on learning and communities of practice has richly demonstrated the significance of social interaction in gaining knowledge (Cross & Borgatti, 2004; O'Connor, 2008). Since it is impossible that individuals or organizations possess all the required information within their formal boundaries, they need to rely on linkages to outside sources to acquire and confirm new information and ideas (Anand, Glick, & Manz, 2002; Wasko & Faraj, 2005). The limited professional sources available to provide formal help mean that people need to turn to informal networks to help them with their needs for technology-related information and assistance (Rice, Collins-Jarvis, & Zydney-Walker, 1999). Rogers (1995) particularly emphasized the importance of interpersonal networks in technology adoption. Since information exchange about new ideas occurs through a convergence process involving interpersonal networks, "the diffusion of innovation is essentially a social process in which subjectively perceived information about a new idea is communicated from person to person" (Rogers, 1995, p. 10). In an empirical study conducted with tourism organizations, Adam and Urquhart (2009) and others (e.g., Hjalager, 2010; O'Connor, 2008) found that the main knowledge creation and transfer mechanism for IT is through informal means such as casual chatting rather than formal mechanisms like training. They stressed that the acquisition of knowledge depends not only on the market or the hierarchy, but also on the social capital accumulated through personal networks of interaction and learning. Hjalager (2010) and Scott et al. (2008) also indicated that an organization's ability to change and adopt new features is greater when the knowledge is shared with informal networks such as destination networks.

Second, with the acquisition of knowledge, social systems such as norms, trust, and social structures play a significant role in the decision process to adopt technology (Adam & Urquhart, 2009; Chow & Chan, 2008; Isham, 2002; Presutti et al., 2007). Merely acquiring information does not guarantee actual technology use by either organizations or individuals. The effectiveness of information diffusion is highly affected by contexts in which people engage in different types of social relationships, and perceive and follow different types of norms and cultures. For example, in terms of technological innovation, the strong embeddedness of individuals in an organization whose members share a high degree of resistance to change hardly leads to innovation decisions regardless of the amount of information they gain.

Moreover, due to the nature of technology adoption which contains risk and uncertainty, the roles of norms and trust on the decision to adopt new resources should not be neglected (Chou, Chen, & Pan, 2006). The uncertainty can be reduced by acquiring information for objective evaluation of newness, but people also depend highly on a subjective evaluation of new technology which is conveyed to them from other individuals who share common attributes or interests (e.g., co-workers or friends) (Rogers, 1995). Organizations and individuals do not innovate in isolation but need to interact with their environment (Kaasa, 2009). Through interactions with others over time, individuals in networks form certain norms, expectations of obligation and trust, which are enforceable through social sanctions (Coleman, 1988; Wasko & Faraj, 2005). In particular, norms are the established behavior patterns for the members of a social system, and the norms tell individuals what behaviors they are expected to perform, and consequently affect individuals' perceptions or attitudes about technology adoption (Coleman, 1988; Rogers, 1995). Thus, decisions to adopt or reject new technology are influenced by whom

individuals interact with and how strongly members perceive and share certain norms in social networks (Rogers, 1995).

In sum, technology adoption as an innovation activity is a social process and no longer the domain of isolated individuals and tangible forms of capital. The intensity of technology use may vary according to the types of social relations in which individuals are engaged. In this sense, it is posited that besides frequently mentioned factors affecting technology adoption such as funds and skilled employees, social capital may have a significant influence on the decision to adopt new technology. More specifically, the functions of social capital as facilitating information gain and stimulating technology use may change or affect individuals' perceptions or attitudes about adopting new technology, which in turn leads to the decision of technology adoption.

This chapter now moves to the discussion of social capital and its relationship to an individual or organization's technology adoption. Thus, in the following section a) the concept of social capital, b) key components of social capital, and c) their impacts on a DMO's technology adoption will be explained.

2.3 Social Capital

The concept of social capital has been adopted in a wide range of arenas and organizational practices including the recruitment process, knowledge management, and innovation (Bresne, Edelman, Newell, Scarbrough, & Swan, 2004). The origin of social capital began with the criticism of two traditional views that explain and describe social action (Coleman, 1988). The first, provided primarily from sociologists, views actors and their actions as controlled by social norms, rules, and obligations. The other view, provided mainly by

economists, views actors' actions as a means of merely gaining maximum utility. Neither the former nor the latter can fully explain social action, since the former treats actors as not having any internal motives for action and the latter neglects the fact that people's actions are also controlled and redirected by social contexts including trust, social networks, and social pressure (Bhandari and Yasunobu, 2009; Coleman, 1998; Lin, 2001). It is believed that Social Capital Theory can reduce the gap by putting economic rationality into a social context (Misener & Mason, 2006).

Lin (2001) explained that there are two driving forces in which individual actors engage in social relations: expressive action and instrumental action. Lin assumed that actors take action to maintain and protect existing valued resources, and to gain additional ones. The former motive promotes expressive action. "Maintaining ones' resources requires recognition by others of one's legitimacy in claiming property rights to these resources or sharing one's sentiments" (p.45). On the contrary, the latter motive to gain and seek additional resources facilitates instrumental action. Heimtun (2007) described the motivation of actors as profits and work. That is, the 'profit' is the material and form of services gained from social relationships and the 'work' is necessary to maintain and reproduce the relationships and resources gained. Besides these two prevailing motives, one plausible motive can be explained by the nature of human beings. As Aristotle pointed out, human beings are social relational beings. Thus, as a central idea of communitarian-minded scholars, the self does not exist in isolation, unencumbered by culture, history, society and instinct; human beings consistently look for and maintain relationships with others (Glover & Hemingway, 2005; Sandel, 1984).

Social capital differs from other forms of capital such as physical and human capital in that it resides in a social relationship, whereas other forms of capital primarily lie in the

individual alone (Bhandari & Yasunobu, 2009; Coleman, 1988; Portes, 1998; Putnam, 2001). Putnam (2001) explained that social capital refers to "connections among individuals—social networks and the norms of reciprocity and trustworthiness that arise from them—while physical capital refers to physical objects and human capital refers to properties of individuals" (p.19). The second important difference is that a single person cannot generate social capital, since it is based on social relations (Bhandari & Yasunobu, 2009; Coleman, 1988; Macbeth et al., 2004). Physical and human capital (e.g., education) can be gained merely by an individual's effort, but social capital cannot. To capitalize on resources in social relations, an individual's engagement in relations and recognition or permission from other actors are inevitable steps (Saxena, 2006). The third difference is that it is an intangible non-material asset, particularly very different from physical capital such as money (Macbeth et al., 2004). Fourth, the social capital may be depleted or die out without continuing investment yet it expands with use (Coleman, 1990, Glover & Hemingway, 2005). That is, as Lin (2001) mentioned, expressive action to maintain relations is necessary. The creation of social capital and its long-term survival are guaranteed by an increase in interaction among actors. One might argue that human capital also has the same characteristic but, for example, the educational attainment of an individual is not affected by the degree of use. These four differences are well summarized by Portes's (1998, p.7) explanation of social capital:

> Whereas economic capital is in people's bank accounts and human capital is inside their heads, social capital inheres in the structure of their relationships. To possess social capital, a person must be related to others, and it is others, not himself, who are the actual source of his or her advantage.

2.3.1 Definition of Social Capital

Social capital has been applied to diverse fields and topics. Its wide uses have led to a multiplicity of definitions and interpretations. Hence, not surprisingly, there seems to be no

widely held consensus about the definition of social capital. This section reviews definitions proposed by several notable scholars in studies of social capital and explains the core idea of social capital.

Bourdieu (1986) defined social capital as "the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance and recognition—or in other words, to membership in a group" (p.248). In this sense, the volume of the social capital depends on the size of the network that an individual can access and mobilize, and the volume of capital (economic or cultural) an actor can possess in his own right by those with whom the actors are connected. Further, he emphasized that the social capital is maintained and reinforced unless members stop investing in the relationships.

Coleman (1988) introduced the concept of social capital as a way to explain people's action. He defined social capital by its function. "It is not a single entity but a variety of different entities, with two elements in common: they all consist of some aspect of social structures, and they facilitate certain actions of actors—whether persons or corporate actors—within the structure" (p.98). That is, unlike other forms of capital such as human and physical capital, social capital contains the structure of relations between or among actors. In explaining the concept of social capital, three forms of social capital are identified, which all facilitate actors' actions: a) obligation and expectations which depend on trustworthiness of the social environment, b) information channels, and c) social norms which either constrain negative action or provoke positive action.

Putnam (2001) defined social capital as "features of social organization, such as trust, norms, and networks that can improve the efficiency of society by facilitating coordinated

actions" (p.167). He stressed that social networks are beyond mere "contacts". Rather, social networks involve mutual obligation and form norms of reciprocity among people engaged in the network activities and associations. His concept of social capital is closely related to civic engagement and participation in voluntary organizations. In his definition, social capital is considered as a collective asset aggregated in a certain community or society. Thus, the number of civic associations and degree of participation in those associations are important criteria to measure the richness of social capital in a society (Bhandari & Yasunobu, 2009).

Lin (2001) defined social capital as "resources embedded in social relations and social structure, which can be mobilized when an actor wishes to increase the likelihood of success in a purposive action" (p.24). Similar to Bourdieu (1986), Lin saw social capital as the investment of actors in social relations with an expected return. Lin's definition emphasized three components: a) resources, b) being embedded in social relations rather than individuals, and c) action by an actor for access and utilization of such resources. Lin divided resources into personal resources such as human capital (e.g. education), and social resources which are accessible through direct and indirect social connections. Social resources also contain other actors' material and symbolic resources such as wealth, power, reputation, and physical resources. Since his approach to social capital is more individualistic than Putnam's concept, an individual's success and achievement are better explained by Lin's notion of social capital.

Adler and Kwon (2002) differentiated the substance, sources, and effects of social capital. They defined social capital as "the goodwill available to individuals or groups. Its source lies in the structure and content of the actor's social relations. Its effects flow from the information, influence, and solidarity it makes available to the actor" (p. 23). In their definition, internal (bonding) and external (bridging) ties are encompassed, and both individual and

collective actors contribute to the creation of social capital. "It also encompasses the social capital that is available to an actor by virtue of already-established ties from the social capital that the actor can mobilize by creating new ties" (p.23). Social capital exists in different forms and is mobilized differently according to a) an actor's opportunity which is usually explained by a different type of tie (internal or external tie) and structural configuration of networks (closure or structural hole); b) an actor's motivation (for example, "*consummatory*" based on norms, enforced trust, and the norms of generalized reciprocity); and c) an actor's ability to access resources embedded in social relations.

Although many scholars have defined social capital in different ways, they tend to share the central proposition of social capital that the network of relationships constitutes valuable resources for both private and collective goals (Bhandari & Yasunobu, 2009; Nahapiet & Ghoshal, 1998). Bhandari and Yasunobu (2009) explained that "the commonality of most definitions is that they emphasize social relations that generate productive benefits. The main difference between these definitions is that they treat social capital as either personal resources or social resources" (p.487). In addition, as Lin (2001) indicated, there seems to be some agreement on three main components emphasized in these definitions of social capital: a) resources (e.g. information), b) being embedded in social relations rather than individuals (e.g., social networks) and c) actions by actors for access and utilization of such resources.

Based on these diverse definitions of social capital, this study defines social capital as an actor's ability to gain any kind of valuable resource embedded in social relationships; more specifically, a) the resources are obtained through the actor's engagement in social relationships or social networks, b) the resource gain is facilitated by a variety of social lubricants such as norms and trust that are either generated or enhanced through the actor's social interactions, and c)

the resources are generated either institutionally (intentionally) or serendipitously. In fact, this definition is very similar to the definition by Lin (2001) and Portes (1998), since the definition of the current study particularly stresses the aspect of an actor's ability to gain valuable resources. That is, it is necessary that the actors engage in some type of social relationship to gain valuable resources. According to the definition, actors are expected to maintain or extend their relationships to gain certain valuable resources, but sometimes the resources can be serendipitously gained through social relations. That is, they can be a byproduct as a result of social interactions. For example, DMO managers may be able to gain valuable technology-related information or help while participating in some associational activities whose main purpose is not to share technology-related information.

The definitions of social capital which are frequently mentioned in the literature are shown in Table 2.1.

Table 2.1 **Definitions of Social Capital**

Authors	Definition
Bourdieu (1986)	"The aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance and recognition—or in other words, to membership in a group" (p.248).
Coleman (1988)	"It is not a single entity but a variety of different entities, with two elements in common: they all consist of some aspect of social structures, and they facilitate certain actions of actors—whether persons or corporate actors—within the structure" (p.98).
Portes (1998)	"The ability of actors to secure benefits by virtue of membership in social networks or other social structures" (p.6).
Nahapiet and Ghoshal (1998)	"The sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit" (p.243).
Putnam (2001)	"Features of social organization, such as trust, norms, and networks that can improve the efficiency of society by facilitating coordinated actions" (p.167).
Lin (2001)	"Resources embedded in social relations and social structure, which can be mobilized when an actor wishes to increase the likelihood of success in a purposive action" (p.24).
Adler and Kwon (2002)	"The goodwill available to individuals or groups. Its source lies in the structure and content of the actor's social relations. Its effects flow from the information, influence, and solidarity it makes available to the actor" (p. 23).
Bhandari and Yasunobu (2009)	"A collective asset in the form of social relations, shared norms, and trust that facilitate cooperation and collective action for mutual benefits" (p.491).

2.3.2 Benefits of Social Capital

Social capital has two distinguishing benefits. First, social capital facilitates information flow (Adam & Urquhart, 2009; Adler & Kwon, 2002; Bhandari & Yasunobu, 2009; Burt, 2000; Lin, 2001; Portes, 1998). In imperfect market situations where everyone is not optimally connected, social ties can provide an individual with useful information about opportunities to access resources otherwise not available. That is, more ties may mean more opportunities to access diverse information in comparison to those having fewer tie connections (Lin, 2001). As an example often cited in the labor market, social ties play an important role in the hiring

processes for both employees and employers. These ties can provide employers and employees with information to find better individuals and better organizations, respectively (Granovetter, 1973; Lin, 1999, 2001). For organizations or firms, having external ties enables acquisition of new and useful information from other organizations and reduces significant transaction costs among them, such as bargaining and decision costs, search and information costs, and policing and enforcement costs (Landry et al., 2002; Mu, Peng, & Love, 2008). In terms of knowledge sharing, Hauser et al. (2007) stressed that through community interaction, trust between members is generated, which in turn serves as a facilitator for the dissemination of information and knowledge acquisition.

Social control is the second benefit of social capital. It is closely related to rule enforcement. Kaasa (2009) expressed it as a social contract or unwritten rule. Building a set of obligations and trust from actors, individuals, or groups can establish greater power to control other actors' behaviors (Bourdieu, 1986; Coleman, 1988; Glover, Parry, & Shinew, 2005; Putnam, 2000). Such power benefits enable actors or organizations to get things done smoothly and to achieve their goals (Adler & Kwon, 2002). Through continuous interactions and social exchanges, actors create reciprocity and expectations toward each other, and develop norms about each other's behaviors which in turn helps communities or groups maintain discipline and promote compliance among members (Coleman, 1988; Portes, 1998; Wasko & Faraj, 2005). In the context of regional tourism development, Macbeth et al. (2004) stressed that "social capital is not only a vital element in communities exercising control over local resources, but also for preventing vested interests from dominating in regional decision making" (p.515).

2.3.3 Individual and Collective Social Capital

Two perspectives of social capital have been identified based on different levels of analysis (Bhandari and Yasunobu, 2009; Lin, 2001): individual social capital and collective social capital. Individual social capital focuses on the use of social capital by individuals, and views it as an attribute of an individual (Bhandari and Yasunobu, 2009; Lin, 2001). It emphasizes that it is an individual who creates, gains, and preserves advantage from social capital (Bhandari & Yasunobu, 2009). Therefore, at the individual level, the main interest is in a person's potential to access and effectively mobilize resources in social networks, and their ability to gain returns from instrumental actions and to maintain the gains and preexisting resources in expressive actions (Lin, 2001). "Focal points for analysis in this perspective are 1) how individuals invest in social relations and 2) how individuals capture the embedded resources in the relations to generate a return" (Lin, 2001, p. 21).

Collective social capital stresses public assets generated at the group level (Putnam, 1998). The basic premise behind this perspective is that social capital is not individual level capital because social relation requires that two or more individuals be involved (Bhandari & Yasunobu, 2009). It emphasizes that unlike human and physical capital in which return on an investment is mainly given to an individual, a kind of social structure benefits all actors engaged in certain activities or social relations rather than primarily the individual person (Coleman, 1988). Thus, "the central interest of this perspective is to explore the elements and processes in the production and maintenance of the collective asset" (Lin, 2001, p.8). At the collective level, norms, trust, and social cohesion, as well as other properties (e.g., sanctions), are often mentioned as facilitators that foster cooperation and collective action between individuals for production and maintenance of their assets (Lin, 2001; Putnam, 1998). Emphasizing the

collective aspect of social capital, Putnam (1998) argued that social capital helps create collective assets in three ways: a) it helps citizens resolve collective problems more easily by increasing the amount of information available; b) it helps communities to advance smoothly; and c) it "improves our lot by widening our awareness of the many ways in which our fates are linked" (p.288).

Given that this study primarily examines how DMO managers' social relationships affect their information gain and decision to adopt Web 2.0 technology, social capital at the individual level will be investigated. However, it is worthwhile to mention that although there have been two different perspectives based on the level of analysis, both individual and collective capital often co-exist or are highly interrelated (Lin, 2001). For example, Burt (2000) and Walter, Lechner, & Kellermanns (2007) showed that in the organizational context, individuals' connections to members in different organizations helps them gain new information, which increases an individual's human capital and in turn, their improved knowledge is shared with members in the same organization which leads to an increase in organizational collective assets.

2.3.4 Key Components of Social Capital

Scholars concerned with ways to measure social capital have proposed different dimensions of it. Although each study adopted different components to explain social capital according to the context, there have been some key components of social capital that are most frequently mentioned: a) social networks, b) trust, and c) norms (e.g., Jones, 2005; Kaasa, 2009; Mu et al., 2008; Nordin & Westlund, 2009; Ross, 2005). This classification of social capital was initially proposed by Putnam (1995), who believed that networks, norms, and trust facilitate coordination and cooperation among actors for mutual benefits. With significant similarity to

Putnam's classification, Coleman (1998) also divided social capital into three elements: a) obligations and expectations, b) social norms, and c) information channels whose roles are considerably overlapped by social networks. These three dimensions have been regarded as the core components of social capital in prior research (e.g., Blanchard, 2004; Weber & Weber, 2007). Okazaki (2008) and others also stated that although the dimension of social capital has not been standardized yet, social capital is generally understood as social networks, norms, and trust (Jones, 2005; Fukuyama, 1995; Weber & Weber, 2007).

By proposing the role of social capital as a facilitator for the creation of intellectual capital in the business context, Nahapiet and Ghoshal (1998) further specified social capital as having three aspects: a) a structural dimension which refers to configurations and patterns of connections between actors including network ties or network configuration, b) a cognitive dimension that contains shared codes, language, visions, and narratives, and c) a relational dimension including trust, norms, obligations, and identification, which bond and control people in networks. Although they used the terms of 'structural' and 'relational' dimension, the main components were not significantly different from the previous components above; that is, social networks, trust, and norms are still key elements of social capital in their classification. The only difference is in the 'cognitive dimension'. The cognitive dimension refers to "resources providing shared representations, and systems of meaning among parties" (Nahapiet & Ghoshal, 1998, p. 244). The cognitive dimension is often represented by common language and codes that are shared only among members in a certain group or firm (Bresne et al., 2004). However, in comprehensive literature reviews relevant to social capital and innovation, Zheng (2010) indicated that the cognitive dimension has not been sufficiently researched and there is little agreement about it. In addition, the cognitive dimension would hardly be detected unless a study

focused on the interactions and communication only among members in a group or organization, or intrafirm networks in limited contexts. In other words, if the researcher was able to confine actors' networks or members to a certain context, considering the cognitive dimension would be beneficial for a better understanding of the effect of social networks on information exchange or innovation. Hence, the cognitive dimension are not considered for this study since the social networks (relationships) of DMO managers are not confined to any context.

This study chose the most agreed upon and common components of social capital that belong to the prevailing classifications of social capital as noted above: a) 'social networks' (networks of social relationships) as the structural dimension of social capital, b) 'trust' toward networked people and c) 'norms' as the relational dimension of social capital. In the following sections, the effects of different components of social capital on technology adoption as an innovation will be reviewed, and based on the review, several hypotheses derived about relationships between these key components and technology adoption are proposed.

2.4 Social Capital in the Tourism Context

Before reviewing relationships between social capital and technology adoption, this section provides a brief review of social capital in the tourism context. It is believed that reviewing literature published in the tourism context will provide an understanding of the overall stream of social capital studies in tourism, and the rationales for the present study.

In the tourism context, unlike other fields such as business and sociology, the concept of social capital has not gained much attention from tourism scholars (Jeong, 2008; Jones, 2005; Okazaki, 2008). In 2005, applying the concept of social capital to explain social change derived from community-based ecotourism development, Jones indicated the scarcity of studies on social

capital in the tourism domain by stating that social capital "has not infiltrated into the tourism literature to any significant degree" (p.305). Because of the lack of literature related to social capital, it is difficult to integrate previous studies into similar topics or study areas. In addition, there have been few empirical studies, and most studies conceptually propose the roles of social capital in tourism-related topics. There is no research that has examined the effects of social capital on IT or technology adoption, however, a study by Adam and Urquhart (2009) that conceptually proposed the role of social capital in sharing IT-related information did not rigorously examine the effect of social capital. Despite the dearth of studies of social capital in the tourism context, there has been one salient topic that several researchers have focused on—that of the relationship between social capital and (successful) tourism development. That is, several scholars have tried to explore how social capital helps successful tourism development, or vice versa. Except for social capital and tourism development-related topics, not many diverse topics have been studied with the tourism context. With a wider standard, other studies have been conducted on three nested topics: travel or travel-related experiences, events or festivals, and the tourism business.

Similar to other fields, the topic of social capital and tourism development has also begun with criticism on traditional views of tourism development that have focused primarily on economic and tangible factors as criteria to evaluate the success of tourism development (e.g., economic impact). As a seminal work on social capital in the tourism context, Jones' (2005) study emphasized that the impact of tourism development needs to be assessed not only by economic criteria, but also by the change to social and cultural aspects, and he tried to understand the process of social change derived from tourism development. Jones viewed social capital as both an outcome from, and process of, tourism development. His findings showed that

social capital plays an important role in leading successful community-based ecotourism development by facilitating cooperation among community members, and at the same time, it is also generated from tourism development. Similar to Jones (2005), Macbeth et al. (2004) also pointed out that too much emphasis has been placed on the economic aspects of tourism development, and they proposed that social capital may provide a new way of thinking about the impact of tourism development. They explored how tourism development can benefit from social, political, and cultural capital (SPCC) and how SPCC can be promoted from tourism development. They proposed that social capital a) facilitates information flow among community members; b) increases a community's sense of well-being; c) minimizes the transaction costs of operating in the market, which in turn facilitates transactions necessary for a market economy; and d) helps the community sustain a safe environment that will be attractive to both tourists and residents.

Saxena (2006) explored the importance of social and personal bonding processes that have the potential and legitimacy to ensure sustainable tourism development and to foster equity in the use of local recourses for tourism development. Saxena focused more on social networks among owners/managers of small-scale tourism businesses in the Peak District National Park, UK. In his study, social bonding among tourism businesses owners and managers helped them become aware of their strengths and weaknesses in rapidly changing environments, and enabled them to adapt their marketing strategies accordingly. Jeong (2008) explored the role of social capital in increasing community members' involvement in tourism development. Given that previous studies dealt with social networks as a main component of social capital, her study was an initial attempt to use social network analysis in the study of social capital in the tourism context. She investigated community members' network structures in detail and examined to what degree a member's different structures and properties of social networks (e.g., centrality,

betweens, and tie strength) are associated with the various levels of community involvement and sense of empowerment. Her findings showed a significant influence of social capital (e.g., perceived benefits of tourism development as cognitive social capital, weak and strong ties as relational social capital, social position of work, and members' centrality in the networks as structural social capital) on community involvement. In particular, she found that while weak ties help the initiation of community involvement, strong ties help sustain members' involvement.

Regarding topics related to travel or travel experiences, Stokowski (1992) was interested in the impact of social capital on travelers' information seeking behavior. Stokowski found differences between weak and strong ties in information seeking behaviors of elder travelers. Weak ties provided access to the more general, day-to-day information needs of travelers such as finding health care or other resources. On the other hand, strong ties were mainly used to gather detailed information about travel destinations or activities available at destinations. In a subsequent study, Stokowski and Lee (1991) examined the influence of network ties in communities. The result showed that there was visible overlap between community networks of sociability and networks of recreation participation. Minnaert, Maitland, and Miller (2009) investigated the benefits of 'social tourism' represented on a low-income group's holiday. They showed that the low-income travelers improved relationships with their family members, and enlarged their social contacts through the holiday, which in turn led to a higher level of confidence and positive changes to their lives. Ross (2005) proposed the contribution of cyber-tourism (e.g. virtual tours and online travel communities) to travelers' social capital. Ross debated the benefits and disadvantages of cyber-tourism in the creation of social capital. The increase of greater networking opportunities with many others with similar interests and in diverse places was indicated as the most important aspect of cyber-tourism.

Arcodia and Whitford (2007) and Misener and Mason (2006) applied social capital to events or festival contexts. Arcodia and Whitford conceptually proposed the significance of festival attendance in facilitating the augmentation of social capital, which was considered to illustrate the social and cultural impacts of tourism events. Misener and Mason (2006) explored the potential in hosting sporting events for the creation of social capital. Like others, both studies criticized the research on the impact of tourism development that has focused too much on the economic aspect, and they proposed that social capital be used as a criterion to evaluate the social impact of tourism-related events.

There has also been a group of studies conducted from a business perspective. Karlsson (2005) specified the concepts of cultural and social capital, and discussed their influence on the production of tourism (e.g., tourism-related businesses and facilities). Karlsson identified the types of social relations which were highly significant in the production of tourism, and their data showed that the community with bridging social capital has a greater chance of having diverse tourism-related businesses and production than places without this bridging. Grängsjö and Gummesson (2006) studied how local tourism businesses and hotels compete and at the same time co-operate in a horizontal network for the collective benefit of all businesses. The results showed that networks of relationships are facilitated with strong trust and commitment among members. In addition, their networking was enhanced when both collective and individual goals came together and members tried to comply with agreed upon codes and basic principles for goal achievement. Barros and Santos (2009) tested the association between hotel managers' earnings and either social or human capital. As a result, they found that most measures relevant to social capital (e.g., weak ties and structural holes) were significant in positively affecting the level of managers' earnings.

In sum, regardless of the topic, the most important change resulting from adopting the concept of social capital in the tourism context would be that tourism scholars become aware of the importance of resources obtained through an individual's social interactions. As Grängsjö and Gummesson (2006) emphasized, tourism operates in the context in which social interaction occurs through relational networks in local proximity. Thus, social aspects of tourism, especially related to social relationships, should not be neglected in tourism research. In this sense, social capital would provide one of the important criteria to assess and understand social aspects of tourism. In other words, an individual's social interactions are valuable resources. However, to fully benefit from adopting the concept of social capital in the tourism context, two suggestions can be made.

First, even though it seems that almost all studies agree that 'social networks' are the most important component of social capital, there has been relatively less attention paid to investigating and understanding the roles and effects of different types of social networks. In fact, not many studies except for those by Jeong (2008) and Barros and Santos (2009) tried to understand social networks in detail by employing social network analysis to assess different impacts according to different network structures among members and the characteristics of an individual's relational ties. Social networks were often simply assessed by 5 or 7 point-Likert scales (e.g., "I have a good relationship with regional tourism officials"). It should not be said that prior studies used inappropriate methods of analysis because this method is still valuable for assessing collective social capital, which is aggregated to a certain group or community. However, it is widely accepted that not only is active participation or involvement in social networks important aspects in understanding outcomes of social networks, but so too is the quality of relational ties (i.e., how many relational ties an actor has vs. with whom an actor may

interact). To investigate the latter case, it may be necessary to adopt social network analysis. Therefore, it is expected that the use of social network analysis will provide both a more detailed and practical description about what types or structures of social networks an individual or group members are engaged in, and greater understanding about how these various types of social networks could lead to different outcomes.

Second, it needs to be reiterated that there have been insufficient social capital and tourism-related studies when compared to other academic areas. In addition, as over half of the studies in the tourism field conceptually proposed the role of social capital in certain topics, relatively few studies have actually applied the concept of social capital, or were conducted in a real tourism context (e.g., Barros & Santos, 2009; Jeong, 2008; Jones, 2005). In fact, different academic areas have revised Social Capital Theory to reflect their unique characteristics by adding some new components and developing different measures of social capital (e.g., cognitive dimensions such as shared codes or languages in the business field). Therefore, more studies in various tourism-related topics will help increase the applicability of social capital to the tourism context.

Reflecting upon the two suggestions above, it is believed that this study will make two contributions. First, by adopting the method of personal network analysis, the study investigates each individual's (the DMO manager) social network and its properties in detail. Second, based on properties of the social networks, an empirical test is conducted to determine what type of social network has the stronger influence on the DMO manger's decision to adopt Web 2.0 technology. This has not yet been studied yet within the tourism context.

2.5 Social Capital and Technology Adoption

In this section, the relationships among the key components of social capital, knowledge or information gain, and technology adoption will be reviewed. However, it is worthwhile to note that the theoretical models of social capital and ICT adoption are still being developed and only a few empirical tests on relationships between social capital and ICT or technology adoption have been conducted thus far (Huijboom, 2007; Landry et al., 2002). Hence, it is necessary to extend the literature review to a wider context; that is, social capital and innovation, which includes diverse types of technology adoption, information sharing or knowledge gain through social interaction. Although "there is no generally accepted empirical model that considers the impact of social capital on innovation" (Doh & Acs, 2010, p. 242), this extension is expected to promote more insightful and empirical studies relevant to explaining relationships between social capital or interaction and technological innovation.

"Innovation is widely understood as the introduction of something new or significantly improved, be they products (goods or services) or processes" (Kaasa, 2009, p. 219). Since innovation necessarily entails the acquisition of new ideas for the improvements of either an individual or organization, innovation refers to any idea, technology, practice, or object that is conceived of as new (Fountain & Atkinson, 1998; Hjalager, 2010; Rogers, 1995; Roxas, 2007). There are various types of innovation; among them are two fundamental forms: a) product innovations which refer to new goods or new quality of goods; and b) process innovations which include new ways or methods of production, or new sources of raw material, and are often regarded as changes offered by organizations (Roxas, 2007; Schumpeter, 1934). In the tourism context, Hjalager (2010) further distinguished types of innovation based on extensive reviews related to innovation research: a) product or service innovation referring to new changes

observed by customers (e.g., snowboard park); b) process innovations referring to backstage initiatives that escalate efficiency and productivity (e.g. ICT or technology adoption); c) managerial innovations, mainly related to organizing human resources; d) management innovations related to new ways of relating between tourism providers and customers, which also include new marketing strategies using ICT such as social media; and e) institutional innovations relevant to embracing organizational structure (e.g. network structures among businesses). Lin (2006) categorized two types of innovations based on the intensity of the change: technological innovation which includes the adoption of new ideas or technologies affecting the output of the organization, and administrative innovation which involves the changes associated with organization's structure affecting policy or resource allocation.

Strictly speaking, the decision to adopt Web 2.0 technology for destination marketing may belong to process or management innovation in that it not only provides DMOs with new ways and methods for destination marketing and promotion, but also helps travelers find information more efficiently. However, regardless of the types of classification, it is obvious that the DMO's adoption of Web 2.0 technology for more effective destination marketing and promotion is one of the key examples of innovation activity. Hence, it is expected that to a large extent, the studies of innovation will help construct a theoretical model that guides and explains the decision process of DMO technology adoption.

Social capital has been regarded as having a significant influence on increasing intellectual capital and leading to technological innovation (Wu, Chang, & Chen, 2008). Katungi (2007) and others mentioned that since social capital is closely linked to information diffusion and to changing an individual's attitudes about technology adoption, it has also been studied as a means of facilitating the adoption of new technologies (Bantilan, Ravula, Parthasarathy, &

Gandhi, 2006; Braun, 2003; Dakhli & De Clercq, 2004; Doh & Acs, 2010; Huijboom, 2007; Isham, 2002). It has long been emphasized that individuals' behavior is strongly affected in part by their embeddedness in social networks, and social interaction influences individuals' attitudes toward the adoption of new technology (Monge, Hartwich, & Halgin, 2008). Bantilan et al. (2006) showed that in the process of new agriculture technology adoption, social capital is used for every stage of the process by contributing to the access of resources, knowledge sharing and dissemination, learning, and facilitating and encouraging adoption. More specifically, social networks enabled individuals to learn the existence of new technologies and the best way of applying them. Then with improved knowledge, as a result of social interactions, they were better able to judge and evaluate the usefulness and effects derived from the adoption of the new technology.

There have been several empirical studies that confirmed social capital as a determinant for the adoption of innovations. Chen (2009) investigated the importance of social capital innovation at the national level and found that social capital is a means to provide innovative learning environments by absorbing different resources to decrease the innovation risk of individuals, and increasing cooperation benefits. Huijboom (2007) showed that each component of social capital, such as trust and social networks, played different roles in facilitating the public sector's ICT adoption according to different phases of technology adoption. In general, social capital was particularly important in the early phase of technology adoption as it effectively reached a critical number of adopters. In the case study of the Umra and Ashta villages in Maharashtra, India, Bantilan et al., (2006) examined the mediation effect of gender and social capital on technology adoption. They found that social networks or informal interactions, which are created by either formal or informal groups such as kinship groups, neighborhood networks,

and work groups, helped farmers generate collective action that leads to positive attitudes of farmers toward technology and encouraged new technology adoption.

In the tourism context, a study that used the concept of social capital to explain the mechanism of IT-related information sharing among tourism organizations was conducted. Adam and Urquhart (2009) explored the role of social capital in facilitating IT-related knowledge creation and transfer processes in tourism related organizations (e.g., resorts). Social capital was divided into three types: structural capital (e.g. network configuration and ties), relational capital (e.g., norms, trust, and obligation), and cognitive capital (e.g., shared code and language). Their findings confirmed that social capital, specifically informal network channels, was a major vehicle for IT information sharing.

Diverse empirical studies on social capital and innovation in different contexts have revealed that different dimensions or components of social capital can affect innovation or technology adoption decisions in dissimilar ways. More specifically, the decision to adopt new technology is either facilitated or hindered by the types and attributes of social networks, the levels of trust among network ties, and the awareness of norms that individuals in social interactions perceive. In the following section, the roles of the different components of social capital and how they facilitate information sharing and technology adoption will be discussed.

2.5.1 Social Networks and Technology Adoption

Social networks are an important component of social capital and play a vital role in technology adoption (Stone & Hughes, 2002). Innovation inevitably contains uncertainty about expected outcomes, and to overcome and reduce the uncertainty individuals tend to interact with their social networks to consult about the adoption decisions of others and gain information

(Rogers, 1995). As mentioned, the decision to adopt technology depends significantly on the diffusion of information (Kaasa, 2007; Rogers, 1995). Not everyone can possess the same amount of information and resources that are required for technological innovation. One possible reason would be that everyone has different opportunities to access resources embedded in social relations (Greve & Salaff, 2001; Lin, 2001). This discrepancy in opportunities is highly associated with the structure and pattern of an individual's social networks.

Monge et al. (2008) and Doh and Ace (2010) explained that social networks affect the diffusion of innovation through social learning, joint evaluation, and social influence. Through social learning, people learn about an innovation's existence and characteristics. Joint evaluation helps network members reinterpret and moderate risky innovation. Social influence acts to encourage people to comply with prevailing social norms or opinions and controlling attitudes on individuals' preferences and behaviors. In a study of the effects of social networks on the decision of early adopters to purchase a mobile device, (the iPhone), Tscherning and Mathiassen (2010) confirmed the role of social networks as a means of providing opportunities for social learning. Their study showed that when early adopters faced difficulties or needed some information in using new functions, they turned to their social networks and gained the information. In the study of information technology outsourcing decisions, Chou et al. (2006) showed that relational ties facilitated access to information, resources, and opportunities which in turn helped technology outsourcing decisions. Landry et al., (2002) provided empirical evidence that a firm's participation in diverse social networks was a significant predictor for its innovation adoption decision by increasing information sharing.

The effect of social networks on technology adoption decisions is often explained by the concept of social contagion (Monge et al., 2008). With respect to technological innovation,

Tscherning and Mathiassen (2010) explained that "social contagion refers to an individual's decision to adopt an innovation depending on other actors' attitudes, knowledge, or behaviors concerning an innovation" (p.56). According to social contagion or contagion hypothesis, not only information about new technology, but also others' experiences and attitudes related to technology adoption, are transmitted through social networks.

It thus seems to be obvious that social networks would be one important factor influencing technology adoption. However, social networks do not exist in a single form but in diverse forms, and thus each individual is involved in different types or structures of social networks (e.g., strong and weak ties, bonding and bridging ties, dense network, etc.). For this reason, studies have proposed and shown different effects of social networks, and their unique advantages and disadvantages in facilitating information gain and leading to an individual's or organization's technology adoption.

The following sections first review relationships between these different types or characteristics of social networks (relational ties) and technology adoption. After reviewing the unique roles of each social network in technology adoption process, the following section discusses and proposes why certain types of relational ties, those of weak and bridging ties, are especially important for DMOs' Web 2.0 technology adoption.

2.5.1.1 Size of Social Networks

Although an individual's network size does not represent any specific type of social network, it has been considered as one of the most common variables having a significant influence on the decision to engage in technological innovation (Zheng, 2010). Hence, before discussing relationships between different types (properties) of social networks and technology

adoption, it is worthwhile to mention briefly the effect of the individual's network size on technology adoption. An individual's or organization's technology adoption is highly affected by the size of connections or technical supports that individuals have; that is, more connections predict higher levels of technology adoption (McFadyen & Cannella, 2004). The underlying assumption of network size is quite straightforward: increasing direct or indirect relationships means increasing the amount of information and chances to encounter new ideas and resources (McFadyen & Cannella, 2004; Nahapiet & Ghoshal, 1998). In terms of the diversity of information, an individual's large social network also increases the chances for connecting non-redundant ties and weak ties, which consequently leads to obtaining a variety of information from diverse sources (McFadyen & Cannella, 2004; Zheng, 2010). Monge et al.'s (2008) empirical study supports that for farmers, richness and multiplicity of contacts with a diversity of agents and people more effectively increased the levels of farmers' technology adoption. Therefore, this study proposes that there is a positive relationship between an individual's network size and technology adoption.

2.5.1.2 Tie Strength and Technology Adoption

Strength of ties generally refers to the degree of intimacy among people with whom individuals interact (Williams, 2005). Granovetter (1973) defined the strength of a tie as "a (probably linear) combination of the amount of time, the emotional intensity, the intimacy (mutual confiding), and the reciprocal services which characterize the tie" (p.1361). It is often described and measured by various characteristics such as their degree of intimacy, the number of different bases for interaction (e.g. friendship as well as shared professional interests) and the degree of mutuality and frequency of contact (Wellman & Wortley, 1990). Generally,

relationships that show high degrees of these characteristics are described as strong ties, in contrast to weak ties which have low degrees of these characteristics. Scholars have proposed and shown different effects of both strong and weak ties on knowledge gain and technological innovation.

Strong ties.

Strong ties have value in sharing information and in gaining help relevant to new technologies. Strong ties generally refer to characteristics of kinship, friendship, and traditional community ties, and are seen as valuable because those with whom a person is connected in this way are reliable providers of a range of resources in times of need (Levin & Cross, 2004; Liff & Steward, 2001). In particular, "strong ties have greater motivation to be of assistance and are typically more easily available" (Granovetter, 1983, p. 209). Hansen (1999) examined the role of weak and strong ties in sharing knowledge across organization subunits and concluded that "having weak interunit ties speeds up projects when knowledge is not complex but slows them down when the knowledge to be transferred is highly complex" (p.82). Similarly, Uzzi (1999) noted that strong or embedded ties can facilitate actors in the network sharing private information and other types of resources that are not easily gained, while weaker ties are useful for public information and resources. Another view is that strong relationships among networked members are beneficial when technical innovation involves rallying support rather than the transfer of simple knowledge (Obsfeld, 2005; Zheng, 2006).

Williams' (2005) study of community groups' technology use showed that the community groups' leaders relied heavily on strong ties when they needed help related to technological issues and problems. She also explained that people generally used strong ties for

emergencies or emotional support. Similar to Williams, Magni and Pennarola (2008) found that when new technology was introduced in an organization, individuals tended to turn to people with strong relationships to gain information about the functions and usefulness of the technology. Tsai and Ghoshal (1998) showed that frequent and close social interactions increased trust and trustworthiness among actors, which in turn increased resource exchange and productive innovation. In studying attributes of relationships that affected the information seeking of managers in accounting firms, Cross and Borgatti (2004) found that "while weak link relationships held potential to yield novel, non-redundant information, they were also risky propositions" (p.143). This suggested that managers often sought information from people with whom they had already interacted to some extent. Mu et al. (2008) and others (Podolny, 2001; Uzzi, 1997) argued that strong ties may actually be more beneficial than weak ties in that they allowed a greater volume of resources to move between networked members.

Weak ties.

However, there are also many counterparts that emphasized the advantages of weak ties on knowledge sharing, particularly on technology adoption. In the information sharing context, significant attention has been given to the importance of the "strength of weak ties" initially proposed by Granovetter (1973, 1983). Granovetter asserted that weak ties are more effective than strong ties in information diffusion processes in that whatever is to be diffused can traverse greater social distances and reach a larger number of people. In particular, the importance of weak ties has been shown in the situation of novel information diffusion such as finding jobs (Granovetter, 1973, 1983; Lin, 1999, 2001). For example, in the nature of the tie between job changer and the contact person who provides crucial information, it is weakly tied people from

whom most job changers received the necessary and crucial information because strong ties tend to be connected to others who are close to a job seeker and so are trafficking information the seeker already knows (Ganovetter, 1973, 1983).

In the business context, weak ties are well-suited particularly for sharing explicit knowledge at the levels of inter-firm or organizations (Hansen, 1999; Mu et al., 2008). The main point is that weak ties usually play a role as bridges which help firms bring new ideas from the external environment. An empirical study by Presutti et al. (2007) confirmed that weak ties as a structural dimension are more important than strong ties in knowledge acquisition and organizational growth. They tried to verify whether social capital can be considered a critical source of knowledge acquisition in high-tech start-ups in Italy. Social networks in their study were focused mainly on relationships with business customers, and the findings revealed that strong ties with business customers were negatively related to knowledge acquisition, which meant that very close relationships with business customers insulated small firms from other external sources of knowledge and information. McFadyen and Cannella (2004) found a quadratic relationship between knowledge creation and strength of ties; that is, as the strength of ties with a person increased, returns to knowledge creation initially increased but then diminished at a certain point. They interpreted this to mean that maintaining and developing strong relationships requires time and effort. Thus, the dependency of strong ties may be a potential disadvantage for knowledge creation.

Studies in community informatics concerning ICT use of communities have also suggested the importance of weak ties in increasing the ICT use of a community. For example, Liff and Steward (2001) investigated the network structure of a community to help residents' ICT use. They stressed that social networks can lead to higher use of ICT by the community residents.

One of their findings was that community centers gained the most information about ICT-related activities by other community groups or organizations from advisory board members, who were weakly linked to community center members. In addition, it was mostly weak ties that attracted new users to the center. Kavanaugh et al. (2003) also showed that social capital, especially weak and bridging ties, was highly correlated to the degree of Internet use by organization leaders.

2.5.1.3 Tie's Externality and Technology Adoption

Based on whether an actor's ties were internal-centered or external-centered, the types or amount of information that individuals can gain varies. Two types of social networks have been often discussed according to the degree of the tie's externality: bonding ties and bridging ties. In fact, many scholars have often used the terms of bonding and strong ties interchangeably (Williams, 2005). For example, Bhandari and Yasunobu (2009) stated that "bonding social capital denotes ties among people who are very close and known to one another, such as immediate family, close friends, and neighbors" (Bhandari & Yasunobu, 2009, p. 498). This definition does not show a distinctive difference from the concept of strong ties. However, the present study clearly distinguishes between these two terms, bonding and bridging ties, in that the two concepts focus more on similarity with people with whom one interacts rather than the strength or intimacy of ties. In this distinction, bonding ties do not necessarily have to be strong. This issue will be discussed in detail in a later section.

Bonding ties.

'Bonding ties' (often expressed as 'bonding social capital') refers to connections among people with similar personal characteristics (e.g., job, class, ethnicity, and education level). Bonding (or

inclusive) ties are good for building trust and solidarity among actors, and facilitating the pursuit of collective goals (Adler & Know, 2002; Bhandari & Yasunobu, 2009; Putnam, 2001). Rogers (1995) emphasized the effectiveness of bonding ties in terms of innovation and information dissemination. "Interpersonal channels are more effective in persuading an individual to accept a new idea, especially if the interpersonal channel links two or more individuals who are similar in socioeconomic status, education, or other important ways" (Roger, p.18). Also, the high risk and uncertainty contained in newness such as innovation, new ideas, or new technologies was more effectively reduced by pre-existing relationships leading to higher degrees of trust and subjective norms (Chou et al., 2006). Magni and Pennarola (2008) found that when individuals perceived a good relationship with their co-workers, in the case of difficulties using new technology, they first used informational channels within the group to better understand the functioning and purposes of the new technology.

Technology adoption is effectively facilitated by the adoption of peers who share similar interests and have a lot in common. The effectiveness of bonding ties on technology adoption is often found in studies related to agricultural-related technology adoption. For example, Isham (2002) tested the effect of characteristics of social structure (social capital) on agriculture-related technology adoption. Isham found that peers' technology adoption had significant influences on others' adoption; that is, households were more likely to have adopted an agricultural practice in the presence of greater adoption among their neighbors. In the context of manufacturing firms, Landry et al (2002) also found that familiarity with different stakeholders contributed to the decision to innovate.

Bridging ties.

In contrast to bonding social capital as a resource located in the internal linkages of individuals, bridging (or exclusive) ties focus on external relationships. This refers to more distant or loose ties that bring individuals or groups together who did not previously know each other by establishing new ties or relationships. Bridging networks with people across diverse groups or institutions helps actors utilize a wide range of resources (e.g., new information and ideas) available for reaching either their private or collective goals (Bhandari & Yasunobu, 2009).

Without bridging ties, individuals, communities or organizations may become locked into old strategies that are not flexible for a rapidly changing situation (Johannesson, Skaptadóttir, & Benediktsson, 2003). Hauser et al., (2007) stressed that new knowledge is more easily disseminated through loose contacts (e.g., activity in clubs and associations) than through close relationships. Individuals that rely on bonding and strong ties are more likely to be similar to each other and, therefore, cannot provide opportunities for sources of new information. Thus, developing a broad network of external relationships increases an individual's higher awareness of others' resources and useful information that may not be circulated in bonding networks (Cohen & Levinthal, 1990).

The advantages of bridging ties are also explained by the concept of 'structural holes'. A group of scholars have often used the concept of 'structural holes' to describe the individual's ability to access external resources. In fact the advantages or benefits of structural holes overlap to a considerable extent with those of bridging ties. The concept of 'structural holes' is differentiated from 'weak ties' in that it stresses social networks as a function of brokerage opportunities rather than the strength of the tie (Monge et al., 2008); that is, it views a lack of connections (often called 'sparseness') between separate clusters in social networks as a source to

create social capital. According to Burt (2000),

> "The weaker connections between groups are holes in the social structure of the market. These holes in social structure—or more simply, structural holes—create a competitive advantage for an individual whose relationships span the hole…People on either side of a structural hole circulate in different flows of information. Structural holes are thus an opportunity to broker the flow of information between people, and control the projects that bring together people from opposite sides of the hole" (p.353)

Thus, structural holes expose actors to novel communities, diverse experiences, and varying ideas, which provide actors with competitive advantage (Obstfeld, 2005; Zheng, 2006).

In an empirical study with technology-based firms, Yli-Renko, Autio, and Sapienza (2001) found that access to external organizations expanded learning opportunities that aided innovation activities such as technological distinctiveness and new product development. Rodan and Galunic (2004) revealed that there was a positive relationship between the sparseness of a manager's network and managerial innovativeness. In the context of inter-firm networks, Tsai and Ghoshal (1998) found that social interaction in the form of bridging ties of team members with other business units directly contributed to an increase in information exchange, which consequently had a significant effect on product innovation.

2.5.1.4 Synthesis of Mixed Results of Relational Ties

This section discusses the mixed findings relevant to the effects of social networks on technological innovation, and proposes hypotheses relevant to a tie's strength and externality. The literature based on strength and externality of ties seems to indicate that all types of relational ties—strong and weak ties, and bonding and bridging ties—have positive influences on technology adoption, but in dissimilar ways. In other words, there have been mixed results about the effectiveness of certain types of relational ties for technology adoption. That is, as reviewed above, each type of tie showed its relative advantages in acquiring technology-related

information and consequently leading to adoption decision.

These mixed results relevant to the characteristics of social networks have been pointed out by several scholars. For example, Williams (2005) raised this issue in her dissertation. She extensively reviewed literature that dealt with the strength of weak ties proposed by Granovetter and found that studies did not completely support Granovetter's strength of weak ties theory. Of the 60 dissertation abstracts that described their results in testing Granovetter's theory, 45% confirmed the theory, 37% showed that both strong and weak ties played a role, and 17% found that strong ties were more effective than weak ones in achieving goals. One possible reason for the discrepancy in findings related to types of social networks is the lack of a clear distinction between strong and bonding ties, and weak and bridging ties (Hansen, 1999; Williams, 2005). In fact, these terms have often been used interchangeably to describe the attributes of relational ties in Social Network Theory, and the advantages or benefits of each tie in gaining and maintaining resources considerably overlap (Zheng, 2010; Williams, 2005). However, before proposing hypotheses related to strong/weak ties and bonding/bridging ties, it is necessary to clearly define and operationalize these types of relational ties to describe a tie's characteristics in detail and to prevent the confusions of findings.

Distinction of ties.

The interchangeable use of strong/bonding ties and weak/bridging ties often leads to misunderstanding and unclear descriptions about the property or characteristics of ties with which actors interact. For example, a co-worker is often simply considered a weak tie (Granovetter, 1973). Thus, if bridging and weak ties are used interchangeably, in a case where a DMO manger mainly gains technology-related information from an employee in his or her

organization, it would be concluded that the manager's network for information gain is a weak or bridging tie. However, this conclusion is problematic in that in fact, the tie with the co-worker in the same organization itself may not function as a bridge to gain information from other organizations or external areas, which means that the tie should not be considered as a bridging tie. As another example, if a key informant of a DMO manager is a friend who often visits his/her house, lives in the same region, and they spend considerable time together, this is a strong tie. However, if the friend works at a different industry that is not tourism-related, then the tie may also play a role in bringing new ideas and information from the external environment. Thus, strictly speaking, it would be what Granovetter (1973) called a "bridging strong tie."

Attempts to distinguish and measure these two ties separately have been made by several scholars (Cassi, 2003; Granovetter, 1973, 1983; Kavanaugh et al., 2003; Williams, 2005). Studying social capital and the pattern of Internet use, Kavanaugh et al. (2003) distinguished bridges and non-bridges according to the number of organizational affiliations: 'bridges' was used if respondents were in two or more external organizations, and 'non-bridges' if respondents were in one or no organization. They also divided weak and strong ties based on the number of ties with acquaintances; that is, acquaintances were considered as weak ties. Williams (2005) also differentiated two terms: 'strong/weak' and 'bonding/bridging' ties. In her study where the relationships between social capital and a community group's technology use were examined, bridging/bonding social capital was represented by ethnicity and geography, which to some extent assesses the similarity of each group. Williams also distinguished these terms, and argued that "people living nearer to each other are expected to be more similar, in more ways, and this represents bonding, within-group social capital" (p.148). Weak and strong ties were measured by frequency of contact, type of relationship (e.g., family or friend), and geographic distance.

Granovetter (1973) was also aware of the 'multiplexity' of ties: "Treating only the strength of ties ignores, for instance, all the important issues involving their content. What is the relation between strength and degree of specialization of ties, or between strength and hierarchical structure?" (p.1378). Bhandari and Yasunobu (2009) and Doh and Ace (2010) also recognized the mulitplexity of ties. They said that in real networks, social ties may contain both bonding in one respect and bridging capital in another respect. Although not closely related to the distinction of strong/weak and bonding/bridging ties, Levin and Cross (2004) also supported the distinction of ties with the concept of 'duality'. They stressed the distinction between strong ties and trust. A strong tie does not necessarily mean the tie is also trusted. Thus, the two concepts—tie strength and trust—are not synonymous. "Tie strength can be a function of work interdependence beyond the voluntary control of the individual. In such situations, a relationship can be characterized as a strong tie, yet not result in a person trusting a coworker with whom he or she is forced to work. Conversely, sometimes people do trust someone whom they do not know well" (p.1480).

Placing emphasis on weak ties in the diffusion process, Granovetter (1983) posited that "individuals with many weak ties are, by my arguments, best placed to diffuse such a difficult innovation, since some of those ties will be local bridges" (p.1367). This argument emphasized not only the significance of weak ties in information diffusion, but also the importance of weak ties as an intermediary that bridges an individual's group or organization to others. According to this argument, not all weak ties are treated as bridging ties. For example, while investigating relationships between occupational status and tie strength, Granovetter argued that in lower level socioeconomic groups, weak ties are often not bridges but rather friends' or relatives' acquaintances. That is, an individual's weak ties, which are not local bridges, should be counted

with the strong ties. In the organizational setting, Burt (1992) also indicated that "weak ties may be associated with non-redundancy, however, they do not necessarily result in non-redundant contacts" (p.25); that is, "strong ties can be also be non-redundant contacts" (p.29). Along the same line, having intense ties with certain people does not preclude the existence of many bridging ties and weak ties nor does it automatically infer bridging ties or structural holes (Zheng, 2010). Thus, Granovetter (1973, 1983) suggested that more insightful personal network analysis can be carried out "by dividing ego's network into that part made up of strong and nonbridging weak ties on the one hand, and that of bridging weak ties on the other" (p.1370).

In supporting Granovetter's argument, Cassi (2003) emphasized that every relationship of the network has to be classified relative to its strength, and that professional networks related to a job probably need to be considered as weak ties, at least in relative terms. Along the same line, Greve and Salaff (2001) divided informal networks into work and non-work related interactions. Every individual could have different roles; that is, two individuals could be relatives, friends, neighbors, and professional colleagues at the same time (Cassi, 2003; Greve & Salaff, 2001). Further, they suggested taking into consideration professional networks in the analysis of personal networks, and argued that those professional networks are quite different from the others not just in terms of tie strength, since professional ties are able to give more intensive and better information. In the tourism sector, in studying the relationship between social and human capital of hotel managers and their earnings, Barros and Santos (2009) also tried to distinguish managers' networks with respect to the job's similarity. They divided social networks into two types: friends and relatives working in hotels and in other activities besides hotels. They further classified ties (friends and relatives) into weak and strong ties by the frequency of meeting.

Supporting these arguments above, this study distinguishes between strong/weak ties, and bonding/ bridging ties. Strong and weak ties in this study capture the intimacy or closeness of relational ties that DMO managers interact with, which has been often assessed by frequency of contact or meeting, living distance, or relationship (e.g., friends or relatives). Given that there have been several measures often used to identify tie strength, assessing tie strength by only one or two criteria (e.g., relatives as strong ties and friends as weak ties) is problematic.

For bonding and bridging ties, the main focus is on the similarity of relational ties related to a DMO manager's job. Strictly speaking, bonding and bridging are not opposites in meaning, but rather different types of ties having different characteristics. Therefore, unlike tie strength, this study distinguishes between bonding and bridging ties according to the tie's externality with respect to the DMO manager's job. The tie is considered a 'bonding tie' if DMO managers are in a relationship with people working in the same or other DMOs, and a 'bridging tie' if DMO managers are in a relationship with people in other areas besides DMOs. Further, bonding ties are divided into two categories: people in the same DMO and those in other DMOs. The former tie is considered stronger than the latter tie in terms of intensity of bonding. For bridging ties, there are two types of ties: people in tourism-related businesses (e.g., restaurant, travel agencies, museums, etc.), and those in other areas (non DMO and tourism businesses). Likewise, the latter tie is considered as stronger than the former tie in terms of the function of bridging. This distinction in ties is depicted in Figure 2.2

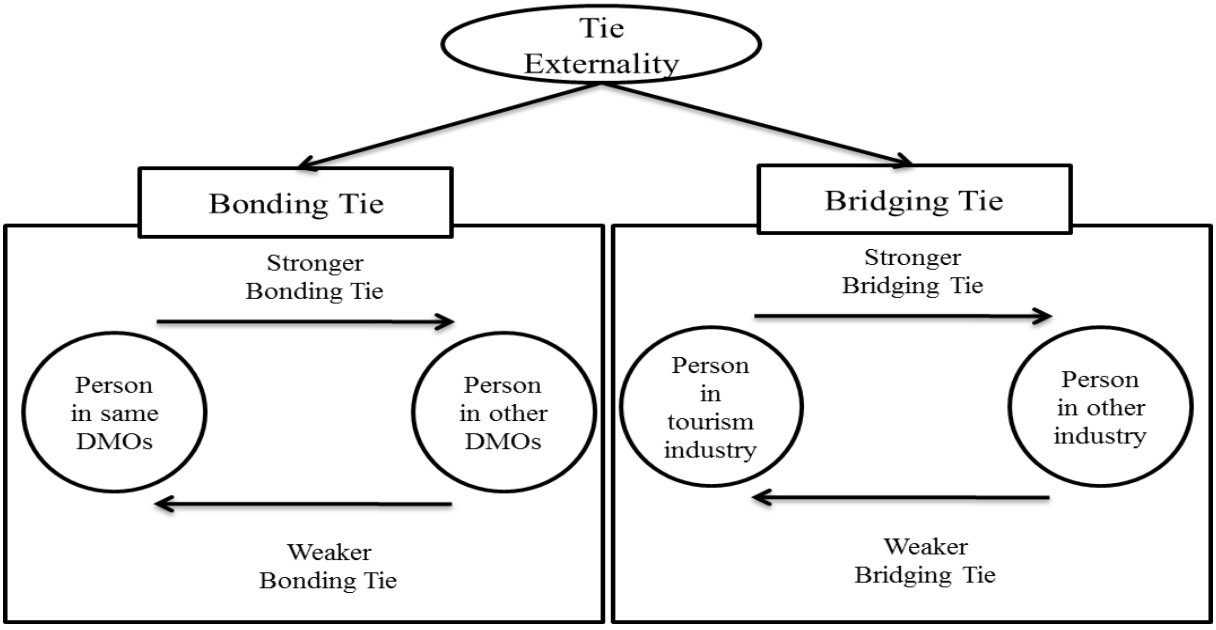

Figure 2.2 **Distinction of Ties**

Effectiveness of weak ties and bridging ties in the DMO context.

With the distinction of each tie above, this section discusses what types of relational ties are more effective for facilitating a DMO manager's decision to adopt Web 2.0 technology, and based on the discussion, hypotheses relevant to each tie are proposed. As a summary of the related strong/ weak and bonding/bridging ties reviewed above, strong ties are likely to be more effective for a technology adoption decision in that the complex or sensitive information may flow well; and in particular, the urgent or emergent information will be effectively delivered to members from strong ties. On the contrary, the concept of weak ties stresses its effectiveness for sharing explicit knowledge and more importantly its potential to acquire novel or non-redundant information that generally does not pre-exist or is shared among people with strong ties. Regarding bonding and bridging ties, the bonding tie emphasizes that more effective communication about newness (e.g. new technology) occurs with the existence of two or more individuals who have a lot in common. The technology people adopt in similar situations or jobs

increases others' technology adoption. Even though this study distinguishes weak ties and bridging ties, the benefits of bridging ties are not much different from the advantages of weak ties; that is, bridging ties also emphasize that bridging networks are beneficial for access to external resources and for information diffusion.

Taking into consideration the context of DMOs and the unique characteristics of Web 2.0 technology, this study supports the importance of weak or weaker ties and bridging ties. In other words, it is believed that weak ties and bridging ties will be particularly effective for facilitating DMO managers' effective information gain and then will lead to Web 2.0 technology adoption. This study considers that the ability to access diverse Web 2.0-related information from a variety of external sources is most important for the process of technology adoption. This study does not argue that strong or stronger ties and bonding ties will hurt DMO manager's information gain and the decision of technology adoption. Those ties are still, no doubt, helpful in the process of technology adoption in dissimilar ways. However, by admitting that each tie has its relative advantages and disadvantages in the technology adoption process, this study proposes that in the case of DMO's Web 2.0 technology adoption, weaker ties and bridging ties may be more effective than stronger ties and bonding ties due to their added ability to provide a wide range of information sources. In the following section, more detailed reasons that support the effectiveness of weak ties and bridging ties on a DMO manager's decision to adopt Web 2.0 technology are discussed.

Tie strength.

Regarding tie strength, there are three main reasons that support the effectiveness of weaker ties on information gain and technology adoption: a) focus on access to information, b)

type of knowledge required, and c) characteristics of Web 2.0 technology.

The first is related to the focus of the present study. It is believed that strong ties are more effective when the study focuses on knowledge movement at the organization level. Hansen (1999) explained that the discrepancy of findings relevant to weak and strong ties results from different foci of studies, and argued that if a study focuses on access to new information, then weak ties are more effective than strong ties. On the contrary, strong ties are considered effective when the focus of the study is on the movement of knowledge from various areas into certain teams or members in an organization (e.g., R&D team or technology transfer) where people know each other beforehand. Hence, once innovative ideas and information are introduced into an organization or firm, the information is distributed effectively and quickly with the existence of strong relationships among employees. However, this study is interested in how DMO managers gain new technology-related information and how the information affects a DMO manager's attitude about technology use rather than how new information is effectively disseminated within the DMO.

The second reason is associated with the characteristics of required information. Literature has indicated that strong ties are more effective when knowledge required for technology adoption is private or sensitive and complex (Hansen, 1999; Levin & Cross, 2004; Uzzi, 1999). However, this study presumes that the information or knowledge required for Web 2.0 technology adoption is relatively less complex and sensitive given that Web 2.0 technology such as Facebook or YouTube has also been used by many individuals for diverse purposes. This may mean that the information about Web 2.0 technology is widely available when compared to other technologies. That is, currently the information may not be considered private and highly complex.

Third, Web 2.0 is not a single technology. Web 2.0 consists of a wide range of technologies such as interactive maps, social networking, and open sources. It may be that an individual with strong ties can have in-depth knowledge about one or two Web 2.0 technologies, and provide considerable information about the technology, but it also means that he or she may not be able to provide information about diverse types of Web 2.0 technologies. In particular, this is a critical concern relevant to strong and bonding ties; that is, the dependency of strong ties insulates individuals from external knowledge and information, which consequently leads to the exchange of similar information. As mentioned, the importance of weak ties lies in its potential to gain non-redundant or novel information and increase the volume of social networks. In particular, McFadyen and Cannella (2004) showed that as tie strength is increased, actors would have less chance to seek new resources and ideas to facilitate individual or organizational innovation. Therefore, as Web 2.0 contains a variety of technologies, and it has changed and evolved so quickly, it would be beneficial for DMO managers to invest in having more weakly connected ties rather than relying on a few strong ties.

For these reasons, a DMO manager's higher levels of weak ties are believed to be positively associated with the levels of the DMO's Web 2.0 technology adoption.

Tie externality.

In terms of tie externality, this study separately assessed bonding and bridging ties (see Figure 2.2). However, it should be noted that this study does not assume that one type of relational tie is not significant for the process of technology adoption. It is hypothesized that both types of ties contribute to information gain and the decision to adopt in dissimilar ways, but that bridging ties may have stronger effects than bonding ties due to the nature of Web 2.0 and its

popularity in a variety of businesses, and the currently low adoption rate of DMOs' Web 2.0 technology. Detailed rationales are discussed below.

First, Web 2.0 technology is not especially designed only for the tourism industry. In other words, Web 2.0 technology is distinct from other technologies that are not Web-based or are designed especially for certain industry or sectors (e.g., agriculture). For example, GDS (Global Distribution Systems), which is a worldwide reservation network system used for reserving hotels, rental cars, or airplane seats, is only being used by the travel industry, such as in travel agencies or other online reservation sites, and it may be impossible to gain newly updated information about GDS from people working in a non-travel industry. Hence, in this case, maintaining bonding ties with people who have in-depth knowledge of GDS and workat similar organizations may be a better way to keep track of new information and to use it. However, as mentioned, Web 2.0 technology has been widely used by a variety of business sectors, which means that it is not necessary for DMO managers to stick to people in the same industry to acquire innovative ideas related to Web 2.0.

Second, Web 2.0 technology contains relatively low risk and uncertainty in terms of return on investment (ROI). It is generally accepted that people become more conservative and highly perceive risk and uncertainty when the cost for adoption is relatively high, which consequently requires more time to adopt technology (Granovetter, 1973; Rogers, 1995). In this case, bonding ties are effective in that diffusion of innovation is facilitated by the existence of a peer's technology adoption. In other words, uncertainty and risk derived from technology adoption are effectively reduced if there are many other adopters who are very similar in certain attributes (e.g., job, educational level, or economic situation). However, Web 2.0 technologies introduced do not require a considerable financial cost to implement, and even most Web 2.0

applications can be operated for free. In fact, unlike other technologies not based on the Web (e.g., Kiosk or mobile devices), once DMO managers gain ideas about Web 2.0, they may be able to try the technology by themselves with low risk, and sometimes risk free. Thus, given that risk and uncertainty can also be reduced with increased information and knowledge, it is expected that being exposed to new ideas relevant to Web 2.0 technology and being aware of its existence not only leads to the increase of DMO manager's knowledge about Web 2.0, but provides DMO managers with opportunities to try the technology.

Third, due to the widespread use of Web 2.0 technology, its adoption by other business sectors can also play a role in facilitating a DMO's adoption. As mentioned, the adoption of Web 2.0 technology has occurred in a variety of business sectors, and it has been used for many different purposes ranging from marketing to personal networking. Hence, although DMO managers interact with people who work in different business sectors or whose job is not very related to the tourism industry, DMO managers can still witness and learn diverse applications of Web 2.0 technology from them. There is no doubt that the main role of DMOs is to promote destinations, but to do so, DMOs need to be involved in various activities so as to cooperate with other tourism businesses, organize tourism activities, and monitor tourist or customer satisfaction. In this sense, it would be expected that external relationships with people working at diverse industries would increase DMO managers' awareness about different types of applications of Web 2.0, and provide new ideas that can be applied to their organization.

The fourth is related to the low adoption rate of DMOs' Web 2.0 technology. Hauser et al. (2004) mentioned that individuals depending on strong ties are more likely to be similar to each other and therefore cannot provide opportunities for sources of new information. Research and anecdotal evidence have repeatedly indicated that not-for-profit organizations lag behind the

private sector in adopting new technology. In particular, Lee & Wicks' (2010) study showed that small to medium-sized DMOs had very low familiarity with Web 2.0 technology and, as expected, had a poor adoption rate. This means that DMOs' Web 2.0 technology adoption is at an early stage, and in the worst case, some DMOs may be very resistant to adopt newness. Hence, it is assumed that keeping close relationships with DMO employees who are considered as typical bonding ties in this study may not be able to provide DMO managers with enough opportunity to acquire innovative ideas and try new approaches.

For these reasons, admitting that a bonding tie still has its relative advantages in knowledge gain and technology adoption decisions, DMO manager's having external relationships through which they are exposed to diverse applications of Web 2.0 is considered more important due to the nature of Web 2.0 and the DMO's current state of technology adoption. Therefore, this study proposes that DMO managers' higher levels of bridging ties will be more positively associated with the level of DMOs' Web 2.0 technology adoption than bonding ties.

2.5.2 Trust and Technology Adoption

For a long time prior research has considered trust as a stimulus to innovation that enhances idea generation through interaction among individuals (Dakhli & De Clercq, 2004). That is, the higher level of trust between parties or individuals, the better the outcomes of knowledge and information gain, which leads to innovation activity. Mayer, Davis, and Schoorman (1995) defined trust as a "willingness to be vulnerable to another party" (p. 712). Trust has been as "confidence in the reliability of others" (Kaasa, 2009, p. 7). It represents an individual's understanding of a relationship. Information exchange is enhanced with strong trust in networks (Kassa, 2009; Widen-Wulff & Ginman, 2004).When trust exists, people are more

willing to share useful knowledge, and are also more willing to listen and absorb others' knowledge (Levin & Cross, 2004). Also, ties with strong trust help reduce conflicts and the need to verify information, and make knowledge or resource transfer less costly (Cross & Borgatti, 2004; Dakhli & De Clercq, 2004; Levin & Cross; 2004; Mu et al., 2008). In an innovation study at the firm level, Tsai and Ghosal (1998) stressed that higher trust allows for spending more time on an innovative activity.

Leven and Cross (2004) explained that these effects of trust mentioned above have been found at both individual and organizational levels of analysis in diverse settings. In the tourism context, studying the role of social capital in facilitating IT-related knowledge creation, Adam and Urquhart (2009) showed that a lack of trust toward tourism organizations precluded the sharing of IT-related knowledge between organizations and community members. Based on extensive literature relevant to social capital and innovation, Zheng (2010) concluded that trust plays a predominantly positive role in the context of innovation which contains uncertainty and ambiguity. Dirks and Ferrin (2001) reviewed prior studies on the influence of trust on individuals' perceptions, attitudes, behaviors, and performance outcomes in organizational settings, and confirmed that in general, lower level of trust among members was associated with higher levels of suspiciousness about the information, while high levels of trust led to higher levels of acceptance of the information.

Doh and Ace (2010) specified the role of trust in facilitating knowledge sharing and innovation. They explained that trust is one of the core values for sharing ideas and information , and emphasized that in order to increase efficiency and productivity, individuals or organizations need to build mutual trust toward actors who they interact with, which is believed to reduce cost and monitoring time to check the validity of information gained from relations. More specifically,

they stressed three main roles of strong trust in facilitating innovation: it reduces transaction and monitoring cost, and the need for intervention to prevent dishonesty, and it encourages networked members to cooperate and share resources (e.g., information, skills, and knowledge).

Tsai and Ghoshal (1998) examined the relationship among social capital, resource exchange, and product innovation, and showed that trust significantly increased the extent of inter-unit resource exchange, which consequently affected product innovation. Studying innovation at the regional level, Kaasa (2009) confirmed that higher general trust in a region led to a higher level of innovation (R&D). Huijboom (2007) proposed that the effects of social capital on ICT adoption by public sectors was different according to each phase of the adoption process, and showed that trust among peer organizations was particularly important in the early adoption phase. Chen (2009) define social capital as social networks, social cooperation and trust, and found that among these three factors, trust was the most important in facilitating innovation activity at the national level. The importance of trust among individuals in the process of new technology acceptance was also supported by Magni and Pennarola (2008). They focused on the impact of relational belief represented by trust toward a team leader on facilitating individual's new technology adoption in an organization. The findings indicated that when individuals had difficulties using new technology, they first turned to co-workers with whom they perceived strong trust to better understand the functions and purposes of the new technology. More importantly, their study found that trust played a critical role in shaping an individual's beliefs about new technology use. Investigating the effect of social capital on the intensity of farmers' technology adoption, Monge et al. (2008) showed the importance of trust in a tie's competence for technological knowledge. According to their findings, having diverse relationships itself did not guarantee an increase in technology adoption. The levels of farmers' technology adoption

increased only with the existence of relationships with key technical agents that farmers indicated as main promoters who were considered to have in-depth knowledge about technology. That is, knowing knowledgeable persons in technology-related fields was important in increasing technology adoption.

In the innovation and knowledge sharing-related studies, there have been two typsof trust that have often been discussed. One group of scholars (e.g., Dakhli & De Clercq, 2004; Doh & Ace, 2010; Kassa, 2007, 2009) divided trust into two types: general trust and institutional trust. Generalized or general trust refers to the trust that people have in other people in general, and institutional trust refers to trust in different institutions such as the media, governments, or organizational policies. Another group of scholars (e.g., Leven & Cross, 2004; Mayer et al, 1995; McAllister, 1995; Schoorman, Mayer, & Davis, 2007), although their naming is somewhat different, have also agreed on two key dimensions of trust: benevolence as an affective component, which refers to "the extent to which a party is believed to want to do good for the trusting party" (Schoorman et al., 2007, p. 345), and competence as a cognitive component.

Among several dimensions related to trust, this study chooses to concentrate on the competence dimension of trust. This is because it is generally considered that generalized and institutional trusts better fits studies that are conducted at the levels of organization or country than at individual levels; as these types of trust are aggregated to the group, community, or society (Doh & Ace, 2010; Kaasa, 2007, 2009). In addition, it is difficult to distinguish the concept of benevolence from the concept of norms or reciprocity, and it is also believed that to some extent, the aspects of benevolence are evaluated by the strength of the tie, which is assessed in this study. In fact, Levin and Cross (2004) empirically confirmed that among two types of trust, competence-based trust was particularly important for knowledge transfer. Hence,

this study will investigate the effects of trust in a tie's (source) competence to provide useful technology-related information and suggestions for DMOs. It is expected that DMO managers who have strong trust in a tie's competence to make suggestions and influence their thinking are more likely to listen and to absorb shared knowledge, and to follow suggestions. Accordingly, it is expected that DMO managers' higher levels of trust in their tie's competence will have a positive relationship with the level of DMO Web 2.0 technology adoption.

In addition, this study also examines the synergistic effects of trust with different properties of social networks, weak, bonding, and bridging ties. Literature related to trust and information sharing has repeatedly stressed that trusting relationships lead to greater and more persuasive knowledge exchange. However, as Levin and Cross (2004) pointed out, there has been less research that looks simultaneously at network ties as a structural dimension of social capital and trust as a relational dimension of social capital. One plausible reason for less attention would be because many studies simply assume that strong and bonding ties may hold strong trust, while weak ties are based on thin trust. However, several studies have provided evidence that regardless of the strength of ties, people have different degrees of trust in different ties. For example, Jones' (2001) study, which examined the relationships between social capital and successful tourism development, showed that even though people had strong relationships with other community members, their trust in members was not necessarily strong. In the knowledge sharing context, Levin and Cross (2004) and Mu et al. (2008) showed that weak ties can also hold strong trust.

Therefore, investigating the degree of trust in each tie of an actor is an important aspect for better understanding the impacts of social networks and trust. Even though this study proposes that weak and bridging ties may more strongly influence knowledge gain and

technology adoption, the effects of those ties, including bonding ties, may vary in different scenarios where trust is low and high. For example, Levin and Cross (2004) argued that the most useful knowledge would come from the instance of weak ties with strong trust since the trusted weak ties can have both a structural benefit which provides non-redundant and novel information, and a relational benefit which facilitates information sharing and increases the effectiveness of shared information. It would be a desirable scenario if individuals' ties are weak or bridging ties, and at the same time they hold strong trust in the tie's competence. Therefore, with respect to trust and the property of social networks it is expected that for each tie (weaker, bridging, and bonding ties) stronger levels of trust will be positively associated with the levels of DMO Web 2.0 technology adoption.

2.5.3 Norms and Technology Adoption

Norms are defined as a tendency to follow normative rules or prevailing opinions which are generated as the result of interaction with others. O'Reilly (1989) defined norms as "expectations about what are appropriate or inappropriate attitudes and behaviors" (p.12). Further, he explained that norms are socially constructed standards that tell people what to do. In uncertain contexts such as technological innovation, norms become primary sources to facilitate innovation decision (Russell & Russell, 1992). Doh and Ace (2010) and others (Dakhli & De Clercq, 2004; Kaasa, 2009; Knack & Keefer, 1997) clearly mentioned and showed that norms facilitate innovation as it not only fosters cooperation and the exchange of information, but also encourage people to adopt new idea. Given that innovation requires, to some extent, proactive behavior and aggressive actions that sometimes cause people to deviate from existing rules, several studies showed that norms such as 'orderliness' sometimes are negatively associated with

innovation activity (e.g., Dakhli & De Clercq, 2004; Kassa, 2007). However, diverse types of norms in most studies of innovation or technology adoption played a positive role in facilitating knowledge sharing and fostering innovative activities or new technology use (e.g., Borgida et al., 2002; Doh and Acs, 2010; O'Reilly, 1989; Russell & Russell, 1992; Smith, Collins, & Clark, 2005).

While there seems to be a consensus about the positive role of norms in innovation, diverse types or forms of norms have been used as a facilitator for an individual's or organization's innovation. Some examples are: norms of civic behavior (Dakhli & De Clercq, 2004; Doh &Ace, 2010), relational norms such as solidarity, flexibility, and conflict harmonization (Ayers, Gordon, & Schoenbachler, 2001), risk taking and team work (Smith et al., 2005), norms of helping and decency, behaving properly and following rules, and active social participation (Kassa, 2009), and common goals, autonomy, and belief in action (O'Reilly, 1989). In addition, norms are often interchangeably used with other terms such as the norms of reciprocity, civic participation, political interest, solidarity or group cohesion (Kaasa, 2009; Zheng, 2010). With some exceptions, these norms are mostly studied as a part of organizational culture (Russell & Russell, 1992; Zheng, 2010). The underlying assumption of these norms is that higher levels of such norms may positively influence organization members' willingness to share their knowledge, facilitate their creative ideas, and increase their openness to new or innovative ideas, which consequently leads to higher levels of technology adoption or innovative activity (Hooff, Ridder, & Aukema, 2004) .

Zheng (2010) pointed out that the inconsistency of terms and different measures used causes difficulty in comparing findings or forming a common foundation for deeper inquiry, and he called for developing particular norms related to innovation. Further he indicated that there

seems to be no firmly agreed upon norms particularly related to innovation among scholars (Zheng, 2010). When a study focuses on an individual's decision to adopt specific technology (e.g., computer use, internet use or agriculture-related technology) rather than innovation of an organization or country in general, particular kinds of norms with respect to an individual's technology adoption need to be considered. In other words, the norms relevant to certain technology adoption by individuals need to be distinguished from the norms that are aggregated and exist in a certain context (e.g., within or inter- group, organization or country).

However most types of norms mentioned above are considered as collective or public norms aggregated in a group or organization, and those collective norms (e.g., helping, cooperative or civic norms, openness, etc.) may be suitable for research conducted in a limited context. That is, to view these norms as influencing the decision of individuals' technology adoption, their networks or social relationships need to be confined to a certain context such as an organization, community, or country. However, as the range of DMO managers' networks in this study is not limited to a certain context, the use of such aggregated norms for this study is problematic. In other words, the study does not try to examine the effect of certain norms on a DMO manager's decision which is only shared among, and perceived by, other DMOs (or DMO members).

Therefore, it is necessary to identify norms that affect and are particularly related to the decision of an individual's technology adoption. As mentioned, it is true that there have been no firmly agreed upon norms which particularly influence individuals' or organizations' technology adoption (Zheng, 2010). However, a considerable body of literature (e.g., Ajzen & Fishbein, 1980; Jeyaraj, Rottman, & Lacity, 2006; Karahanna, Straub, & Chervany, 1999; Lim, 2010) focused mainly on the factors affecting the decision of certain technology adoption and has

repeatedly found that 'subjective norms' are a significant predictor of individuals' technology adoption. In the technology adoption process, 'subjective norms' refer to how specific individuals or referent groups think that he or she should or should not adopt new technology (Ajzen & Fishbein, 1980). Like other norms, subjective norms are also exerted by a group or individuals with whom one interacts, and are viewed as unwritten rules that function as social pressure that make people tend to follow similar actions by using the threat of detachment from the relationship (Frank, Zhao, & Borman, 2004; Zheng, 2010).Thus, the central concept of subjective norms in the technology adoption context is that the decision to adopt technology is also affected by the enforcement of social norms, which are perceived through social interactions, and help individuals anticipate how others or referent groups will react to their decision of technology adoption (Monge et al., 2008; Zheng, 2010).

Rice, Grant, Schmitz, and Torobin (1990) argued that attitudes about using new technology are not only based on one's own subject experience but also on the product of social influence exerted by social interactions. In the technology adoption process, frequent social interactions and information sharing provide a shared context where networked people re-interpret prior behaviors and attitudes, and are aware of prevailing norms relevant to new technology, which influence subsequent attitudes (Russell & Russell, 1992). Thus, individuals may be hardly aware of these subjective norms that encourage technology adoption without active social interactions; that is, an individual's awareness of the subjective norms are enhanced or hindered according to types of social networks, and depend largely on these with whom they interact. Therefore, it is expected that a DMO manager's higher awareness of subjective norms will be positively associated with the DMO's Web 2.0 technology adoption.

Besides the direct effect of subjective norms on technology adoption, this study also

stresses subjective norms as a means to influence and directly control individuals' behaviors and attitudes about new technology adoption. Strictly speaking, this study considers norms as a variable influenced by other dimensions of social capital. This issue will be specifically discussed in the section presenting the conceptual framework.

2.5.4 Associational Activity and Technology Adoption

Aside from the three main components of social capital—social networks, trust, and norms— this study will include 'associational activity' which also plays an important role in facilitating information sharing and technology adoption. Associational activity is also commonly used as an indicator of social capital (Monge et al., 2008). It refers to the tendency of people to participate in associations and other types of voluntary organizations or types of activities where diverse interactions with others happen (Doh & Ace, 2010). Associational activity with multiple organizations is an important factor in that it helps individuals make contacts with other members from diverse backgrounds and gain information and knowledge in various fields regardless of whether the ties are weak or strong (Doh & Acs, 2010; Kaasa, 2009).

Dakhli and De Clercq (2004) argued that associational activity facilitates innovation through membership in a variety of external organizations, which increase one's exposure to different ideas and provide different sources of information. The longitudinal study with private sector organizations by Hauser et al. (2004, 2007) showed that among different dimensions of social capital, associational activity displays a lager impact on the European region's innovation than other dimensions such as friendship ties. Landry et al., (2002) investigated the impact of social capital on decisions to innovate and the magnitude of radicalness of innovation in manufacturing firms. The results indicated that relational (e.g., relationships with managers) and

participation assets (meetings or associations) increased the likelihood to innovate. In particular, research networks (e.g., university) and participation networks showed a relatively high influence on radicalness of innovation. Nyangena (2004) found that the adoption of new agricultural technology in rural areas was facilitated in response to not only trust among people, but also increased participation in group or associational activity. Monge et al. (2008) similarly found that there was a significant correlation between the number of organizations that farmers were affiliated with and the degree of technology adoption.

Although associational activity has been long considered an important determinant for an individual or organization's innovation, there has been less attention paid to formatting theoretical approaches to explain the effect of associational activity. That is, most studies simply tested the relationships between technology adoption or innovation and associational activity, and showed a positive correlation with the activity. For a more theoretical explanation for the importance of associational activity to information sharing and technology adoption decision, the concept of 'information ground' is introduced in this study.

The Theory of Information Ground was proposed by Pettigrew (1998, 1999) and developed by Fisher, Durrance, and Hinton (2004). Pettigrew (1999) studied information flow among nurses and the elderly in community health clinics, and defined information ground as "an environment temporarily created by the behavior of people who have come together to perform a given task, but from which emerges a social atmosphere that fosters the spontaneous and serendipitous sharing of information" (p. 811). Information ground focuses on an individual's behavior in informal settings such as book clubs or sports centers. Fisher et al. (2004) explained that information ground can occur anywhere at any time, and is a byproduct of social interaction. That is, the place where people naturally give or obtain information both purposefully and

serendipitously can be an information ground. Further, they explained that as people visit and engage in social interaction, their conversation in various situations leads to both formal and informal information sharing on a variety of topics in varied directions as well as building social networks.

With the theory of information grounds, it has been suggested that there are diverse types of information grounds (e.g., ballparks, healthcare centers, libraries, schools, group social gatherings, etc.). As a simple example, people go to the gym and their primary purpose may be to exercise or work out rather than finding some information about a topic. However, while working out, people often engage in social interaction with others in the gym by talking about diverse topics ranging from life in general to specific situations possibly related to their job. Likewise, DMO managers' participation in whatever associational activities means they go into information grounds even though they do not participate in the associational activity especially for the purpose of obtaining technology-related information. Thus, it is expected that information related to Web 2.0 technology and its application to business is shared, or needs for technology-related information emerge through casual social interactions in associational activities. As mentioned, given that a variety of businesses are using Web 2.0 technology, DMO managers' engagement in multiple associational activities (e.g., memberships, social gatherings, sports activities, etc.) may increase chances to obtain new ideas about new technology and to have someone who can share technology-related information with them. Therefore, it is expected that DMO managers' higher levels of participation in associational activity will be related to the level of DMOs' Web 2.0 technology adoption.

2.6 Conceptual Framework

This section develops the research model by placing the roles of social capital reviewed in the previous sections into two theoretical models (TRA and TAM) that explain an individual's technology adoption process.

2.6.1 Research Model Building

This study emphasizes that technology adoption is a strategy "which encompasses the mental process that an individual undergoes from first hearing about to finally adopting an innovation" (Monge et al., 2008, p. 2). In the technology adoption process, potential users gain information about new technology through social interactions. Based on the obtained information that provides them with the opportunity for subjective evaluation about new technology, they change their perceptions and attitudes about the technology (Alrafi, 2009; Davis, 1986; Davis, Bagozzi, & Warshaw, 1989; Hiramatsu, Yamasaki, & Nose, 2009; Rogers, 1995). Relative to social capital, Yli-Renko et al. (2001) argued that social capital not only facilitates the knowledge acquisition about new ideas but also enhances the ability and opportunity to judge the usefulness and effect of the ideas.

Even though almost all scholars concerned with the effect of social capital on technology adoption or innovation acknowledged that social capital affects knowledge gain or information sharing, which in turn facilitates innovation activity, most examined the direct effects of social capital on innovation activity rather than examining how it affects innovation decision making. However, Rogers (1995) and others (Frank et al., 2004; Greve & Salff, 2001; Monge et al., 2008) clearly stated that the critical human factor that affects the implementation of new technology is the individual's perceptions of and behavior toward the technology, which are significantly

affected by knowledge, information, and an interpretation of new technology that are shared through social relations. Supporting this argument, in addition to the direct effect of social capital on a DMO's technology adoption, this study posits that social capital may influence a DMO manager's decision making process for technology adoption. More specifically, it is hypothesized that by facilitating information gain and encouraging technology adoption, social capital influences a DMO manager's perceptions and attitudes about Web 2.0 technologies, and consequently the changed perceptions and attitudes affect the decision to adopt Web 2.0 technology for their organization.

It is therefore necessary to integrate social capital into the technology adoption process. To do so, in the following section two theoretical models addressing the technology adoption process will be reviewed—the Theory of Reasoned Action (TRA) and the Technology Acceptance Model (TAM)—and synthesized by incorporating the dimensions of social capital into the research model to be used in this study.

2.6.1.1 Theory of Reasoned Action (TRA)

The Theory of Reasoned Action (TRA) is a fairly well-established theoretical model of human behavior developed in the field of psychology (Davis, 1980). The TRA was developed by Fishbein and Ajzen (1975) for the purpose of predicting and understanding a person's behavior. TRA is based on the assumption that "human beings are usually quite rational and make systematic use of the information; that is, people consider the implications of their actions before they decide to engage or not engage in a given behavior" (p.5). According to TRA, the most direct determinant of a behavior is a person's intention to perform it, and the intention to engage in actions is jointly determined by two important determinants: attitude toward performing the

behavior and subjective norms reflecting the social influence of people who are important to the individual.

Attitude towards behavior refers to personal judgments that indicate whether performing the behavior is considered good or bad—that whether the person is in favor of or against performing the behavior. A person's attitudes are a function of the strength of a person's belief (perceived consequences); that is, it is the behavioral belief that performing a behavior leads to various outcomes and his or her evaluations of these outcomes. Therefore, any effort to change a person's attitude towards a behavior must take into consideration the salient beliefs resulting from the evaluation of these outcomes.

Subjective norms are defined as the person's perception of the social pressure put on him or her to perform or not perform the behavior in question. A subjective norm is also a function of belief; that is, it is the normative belief that specific individuals or referent groups think he or she should or should not perform the behavior (Ajzen & Fishbein, 1980).

The relative importance that each of these two determinants has on a person's behavioral intention will vary from individual to individual and intention to intention. In connection with social capital, one of the underlying assumptions in TRA is that information must be provided, which influences a person's behavior, and normative expectations of specific referent groups, and that a person needs to be aware of his or her specific referent individuals or groups. With respect to these two assumptions, social capital is considered to meet these assumptions in that individuals gain information about new technology, and are aware of prevailing opinions relevant to the technology adoption through interactions in their social networks.

The TRA is modeled below in Figure 2.3:

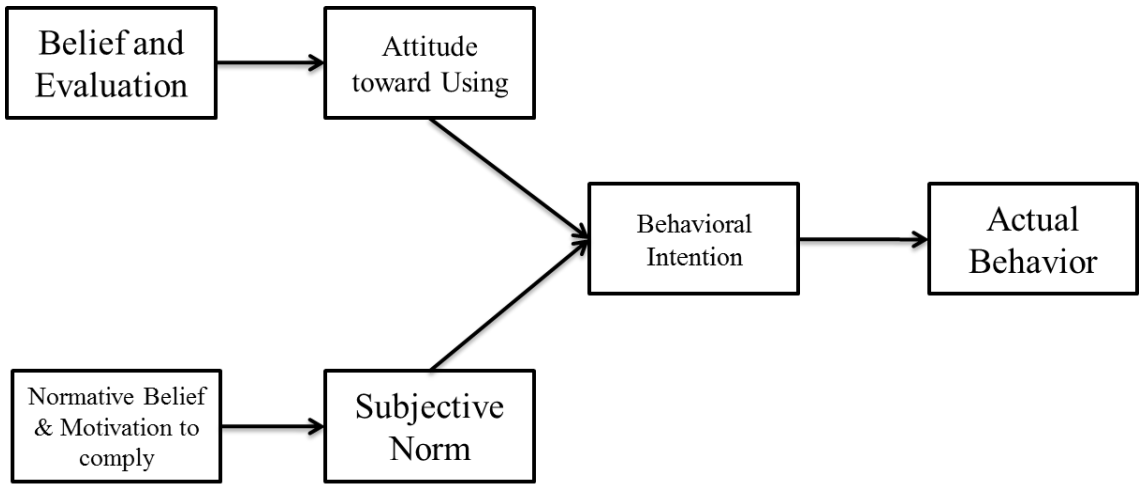

Figure 2.3 **Theory of Reasoned Action by Fishbein & Ajzen (1975)**

2.6.1.2 Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) was developed by Davis (1985) to examine an individual's ICT acceptance process (see Figure 2.4). Davis adopted TRA to specify causal linkages between two key determinants: a) perceived usefulness and b) perceived ease of use. Perceived usefulness refers to "the degree to which an individual believes that using a particular system would enhance his or her job performance" (p.26). Perceived ease of use is defined as "the degree to which an individual believes that using a particular system would be free of effort" (Davis, 1989, p. 320).

'Attitude toward using' is a function of these two major beliefs, and perceived ease of use has a causal effect on perceived usefulness. In addition, by representing beliefs (usefulness and easy to use) separately, the model enables one to assess the effect of the technology studied on each belief apart from one another, and to assess the influence of ease of use on usefulness. This separation is particularly important for technology adoption-related contexts in that new technologies often increase usefulness while at the same time decrease perceived ease of use.

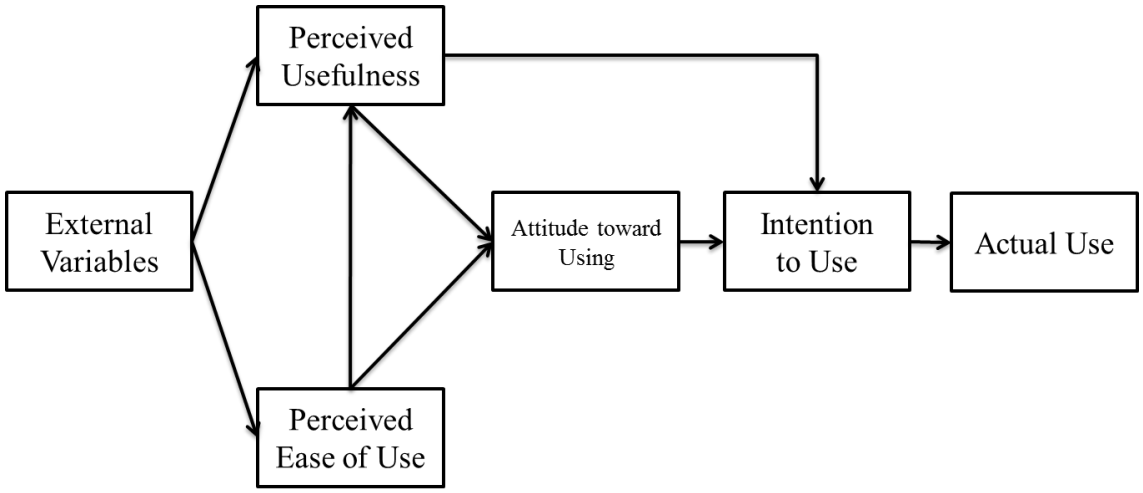

Figure 2.4 **Technology Acceptance Model by Davis (1986)**

2.6.2 Proposed Research Model

The main differences between TRA and TAM can be explained in two ways. First, in TAM, Davis (1986) included more specific technology-related attributes such as 'perceived ease of use'. Although in TRA, 'perceived ease of use' can be, to some extent, assessed by 'belief and evaluation', treating it as an independent determinant seems to be reasonable given that there has been a widely accepted bias that technology is always difficult to use. Thanks to its inclusion of technology-specified perceptions, many scholars have adopted the TRA model in their studies related to innovative system use (Luo, Remus, & Sheldon, 2007). In the tourism context, the TAM model has also been applied to diverse subjects such as travelers' use and acceptance of online travel websites or agencies (Luo et al., 2007), travelers' e-shopping (e.g., online travel ticketing) intention (Chistou, Avdimiotis, Kassianidis, & Marianna, 2004), employees' intention to use new technology in hotels (Ham et al., 2008), and travel managers' adoption of marketing support systems (Wöber & Gretzel, 2000). Jeyaraj et al. (2006) conducted a meta-analysis by examining 99 studies related to IT adoption published between 1992 and 2003, and found that

perceived usefulness, ease of use, and attitudes were the most utilized of the independent variables to predict individual or organizational IT adoption.

In the TAM model, the factor of 'subjective norms' representing social norms was totally omitted (Mathieson, 1991). This omission has been criticized by scholars because it neglects the role of social influence and pressure or social variables on information technology acceptance (Malhotra & Galletta, 1999). The standard model of innovation diffusion has repeatedly suggested that people change their perceptions and attitudes about the value of the new technology based on perceived social pressure, which is often exerted by shared norms among networked people (Frank et al., 2004 Kaasa, 2009; Karahanna et al., 1990; Rogers, 1995). Since TAM was developed based on the experimental design (or laboratory design) method where pre-instruction about technology was given to participants and the survey was completed, the consideration of social influence or interactions was virtually impossible. Criticizing the little attention given to subjective norms in literature related to innovative decision making (e.g., new technology adoption), Kaasa (2009) emphasized that norms generated through social relations play an important role in influencing the behavior of individuals or firms on the diffusion of innovation. The importance of subjective norms as an independent predictor was found in Jeyaraj et al.'s (2006) meta-analysis study where among a variety of independent variables related to innovation, 'subjective norms' was one of the top three best predictors of 'individual's intention to use', 'perceived usefulness', and 'relative advantage'. A similar meta-analysis of previous studies on TAM conducted by Schepers and Wetzels (2007) examined the role of subjective norms in the technology adoption process and found that subjective norms significantly influenced perceived usefulness and behavioral intention.

Several empirical studies have also supported the importance of subjective norms in

technology adoption decisions. In the context of IT adoption in tourism organizations, Adam and Urquhart (2009) revealed that the adoption of expensive resort management software can be attributed to social influence from international resorts that recognized IT as an important tool for efficiency and productivity. Frank et al. (2004) also explored how social capital within schools affected the implementation of computer technology. They found that social pressure from colleagues was particularly important in the decision to use computer technology. Exploring the adoption of ICTs among partners in public sectors, Huijboom (2007) stressed that adopting new technology always needs a critical number of adopters. Social capital was used to gain a critical mass of adopters that enforce and facilitate non-adopters' adoption decision. In the study of ICT adoption by hospitality services (Fuchs et al., 2009)**,** clearly identified tourists and business partners were an important (referent) group and perceived pressure from groups who expected a business to use the latest technology and is an important determinant for ICT adoption.

Therefore, it seems reasonable to consider that 'subjective norms' needs to be considered as a vital determinant influencing an individual's technology adoption decision. Moreover, in this study 'subjective norms' is especially important in connection with social capital in that the present study emphasizes that social networks may play a critical role in facilitating not only knowledge sharing but also in increasing an individual's awareness of certain norms. In this sense, this study posits that along with other perception factors (perceived 'ease of use' and usefulness), the DMO manager's awareness of subjective norms will be influenced by the characteristics of their social networks and in turn will influence the decision to adopt. That is, according to who DMO managers interact with, the degree of DMO managers' awareness of subjective norms relevant to Web 2.0 technology use for their organization may vary.

Based on the arguments above, this study proposes the research model in Figure 2.5 in

which the two theoretical models (TRA and TAM) are synthesized by taking into consideration the effects of social capital factors on technology adoption decisions. In the model, the components of social capital (social networks, trust, and norms) are expected to directly and indirectly influence DMO managers' perceptions and attitudes about Web 2.0 technology adoption, which subsequently affects the level of DMOs' actual Web 2.0 technology use for destination marketing.

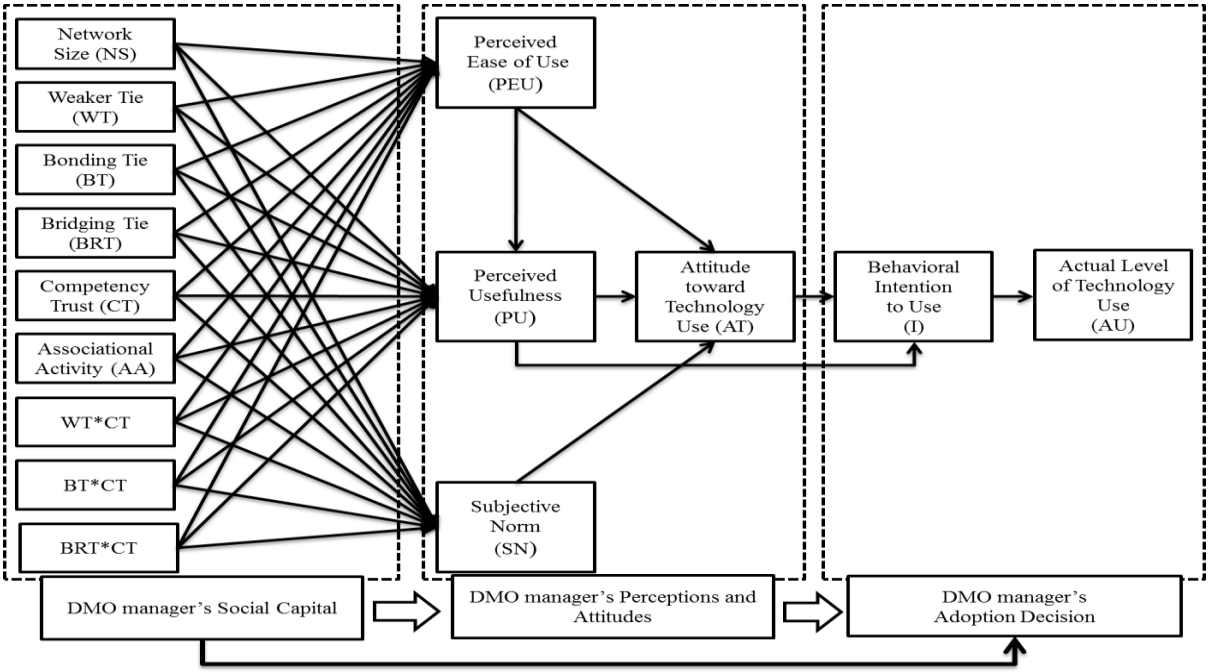

Figure 2.5 **Proposed Research Model**

2.7 Summary

This chapter first explored Web 2.0 technology and its usefulness for destination marketing and promotion, and the low level of Web 2.0 technology adoption by DMOs was discussed. Emphasizing the important aspects of an actor's social relationships in new technology adoption, this chapter discussed the important role of social capital in facilitating information gain and encouraging the adoption of Web 2.0 technology by DMOs. Three main components of

social capital were identified—social networks, trust, and norms—and their relationship to technology-related information gain and technology adoption decisions were discussed.

Regarding social networks, it was proposed that weak and bridging ties have a stronger influence on knowledge gain and technology adoption, and are more influential, than strong and bonding ties in a DMO manager's decision to adopt Web 2.0 technology for their organization. For trust, this study emphasized its effectiveness for conveying persuasive knowledge. That is, it was proposed that individuals are more likely to absorb knowledge and suggestions when these are shared with, and provided from, a person whom they competently trust. Moreover, it was also proposed that the effects of different types of relational ties on technology adoption are enhanced with the existence of strong trust in technological competency of networked people. With regard to norms, particularly subjective ones which are formed and perceived in social networks, norms were stressed as an important factor in encouraging a DMO manager's Web 2.0 technology adoption. Besides the three main components of social capital, associational activity was also considered as an important social capital-related factor that helps DMO managers gain technology-related information sharing and build diverse social networks.

In the last section, this study proposed the research model based on the role of social capital in facilitating information gain and encouraging DMO managers' Web 2.0 adoption. More importantly, the research model was developed by adopting two theoretical models (TRA and TAM) that explain DMO managers' decision process for Web 2.0 technology adoption.

CHAPTER III

RESEARCH METHOD

The chapter explains the methodology used to address the research questions and test a series of hypotheses. It consists of four sections: a) proposition of hypotheses; b) questionnaire design including operationalizations and measurement of each concept in the research model; c) data analysis methods that are suitable for addressing each research question; and d) data collection procedures.

3.1 Proposition of Hypotheses

In chapter two, this study reviewed the role of social capital in an individual's or organization's adoption of new technology. Based on the literature review and proposed research model (see Figure 2.5), this section proposes two sets of hypotheses to address research questions 2 and 3. Research question 1("What are the characteristics of social ties that DMO managers rely on for gaining information relevant to tourism technology?") seeks to understand overall patterns and provide a big picture of relational ties where DMO managers gain technology-related information and help. Therefore, no hypothesis for research question 1 is presented.

3.1.1 Hypotheses for Research Question 2

RQ 2: What is the relationship between the characteristics of a DMO manager's social capital (networks) and the DMO's technology adoption?

Hypotheses to address research question 2 mainly examine the direct relationships

between the components of social capital (e.g., social networks, norms, trust, etc.) and the levels of a DMO's Web 2.0 technology adoption. Based on the literature review in chapter two, the summary of hypotheses is provided in Table 3.1.

Table 3.1 **Summary of Hypotheses for Research Question 2**

Network size and Technology adoption	H1	The bigger network size of the DMO manager will be positively associated with the level of a DMO's Web 2.0 technology adoption.
Tie strength and Technology adoption	H2	DMO managers' higher levels of weak ties will be positively associated with the level of a DMO's Web 2.0 technology adoption.
Tie externality and Technology adoption	H3a	DMO managers' higher levels of bridging ties will be more positively associated with the level of a DMO's Web 2.0 technology adoption than bonding ties.
	H3b	DMO managers' higher levels of bonding ties will be positively associated with the levels of a DMO's Web 2.0 technology adoption.
	H3c	DMO manager's higher levels of bridging ties will be positively associated with the levels of a DMO's Web 2.0 technology adoption
Trust and Technology adoption	H4a	DMO managers' higher levels of trust in their tie's competence will be positively associated with the level of a DMO's Web 2.0 technology adoption.
	H4b	Weaker ties with stronger trust will be positively associated with the levels of DMO Web 2.0 technology adoption.
	H4c	Higher levels of bonding ties with stronger trust will be positively associated with the level of a DMO's Web 2.0 technology adoption.
	H4d	Higher levels of bridging ties with stronger trust will be positively associated with the level of a DMO's Web 2.0 technology adoption.
Associational activity and Technology adoption	H5	DMO managers' higher levels of participation in associational activity will be positively associated with the level of DMOs' Web 2.0 technology adoption.
Subjective norms and Technology adoption	H6	DMO managers' higher awareness of subjective norms will be positively associated with the level of a DMO's Web 2.0 technology adoption.

3.1.2 Hypotheses for Research Question 3

RQ 3: How does social capital affect a DMO's technology adoption process? Hypotheses to address research question 3 mainly examine the effects of social capital on DMO managers' decisions to adopt Web 2.0 technology for their organization.

More specifically, the hypotheses test the role of social capital in helping individuals become exposed to diverse sources to gain technology-related information, and in turn affect their perceptions and attitudes toward adopting new technology. Based on the proposed research model (see Figure 2.5), a series of hypotheses is provided in Table 3.2.

Table 3.2 **Summary of Hypotheses for Research Question 3**

Social network and Perceptions	Network size and Perception	H7a	The size of networks has a positive influence on perceived usefulness
		H7b	The size of networks has a positive influence on perceived ease of use
		H7c	The size of networks has a positive influence on subjective norms
	Tie strength and Perceptions	H8a	The weaker tie has a positive influence on perceived usefulness
		H8b	The weaker tie has a positive influence on perceived ease of use
		H8c	The weaker tie has a positive influence on subjective norms
	Tie externality and Perceptions	H9a	The higher degree of bonding ties has a positive influence on perceived usefulness
		H9b	The degree of bonding ties has a positive influence on perceived ease of use
		H9c	The degree of bonding ties has a positive influence on subjective norms
		H9d	The degree of bridging ties has a positive influence on perceived usefulness
		H9e	The degree of bridging ties has a positive influence on perceived ease of use
		H9f	The degree of bridging ties has a positive influence on subjective norms
		H9g	Bridging ties have a stronger positive influence on each perception than bonding ties
	Trust and Perceptions	H10a	Trust in a tie's competency has a positive influence on perceived usefulness
		H10b	Trust in a tie's competency has a positive influence on perceived ease of use
		H10c	Trust in a tie's competency has a positive influence on subjective norms
	Interaction effects and Perceptions	H11a	There will be an interaction effect of the weaker tie and competency trust on perceived usefulness
		H11b	There will be an interaction effect of the weaker tie and competency trust on perceived ease of use
		H11c	There will be an interaction effect of the weaker tie and competency trust on subjective norms
		H11d	There will be an interaction effect of the bonding tie and competency trust on perceived usefulness
		H11e	There will be an interaction effect of a bonding tie and competency trust on perceived ease of use
		H11f	There will be an interaction effect of a bonding tie and competency trust on subjective norms
		H11g	There will be an interaction effect of a bridging tie and competency trust on perceived usefulness
		H11h	There will be an interaction effect of a bridging tie and competency trust on perceived ease of use
		H11i	There will be an interaction effect of a bridging tie and competency trust on subjective norms
	Associational Activity and Perceptions	H12a	Associational activity has a positive influence on perceived usefulness
		H12b	Associational activity has a positive influence on perceived ease of use
		H12c	Associational activity has a positive influence on subjective norms
Perceptions and Attitudes	Perceived Ease of Use	H13a	Perceived ease of use has a positive influence on perceived usefulness
		H13b	Perceived ease of use has a positive influence on the attitude toward Web 2.0 technology use
	Subjective Norms	H14	Subjective norms has a positive influence on the attitude toward Web 2.0 technology use
	Perceived Usefulness	H15a	Perceived usefulness has a positive influence on the attitude toward Web 2.0 technology use
		H15b	Perceived usefulness has a positive influence on the behavioral intention to use Web 2.0 technology
Attitude and Intention to use	Attitude	H16	The attitude toward Web 2.0 technology use has a positive influence on the behavioral intention to use it
Intention to use and Actual level of Web 2.0 use	Intention to Use	H17	The behavioral intention to use has a positive influence on the actual level of DMOs' Web 2.0 technology use

3.2 Questionnaire Design

The questionnaire for the study was structured in three main sections for investigating: a) characteristics of DMO managers' social networks, b) DMO managers' perceptions and attitudes about technology adoption, and c) characteristics of DMOs and respondents (see Appendix 1). In the following section, key constructs are operationalized using established measures either in an adapted form to minimize concerns for survey length and to fit the context of the study or in their original format.

3.2.1 Characteristics of Social networks and Measurements

Regarding social capital or social networks, the number of total relational ties, the number of most influential ties, strength of ties (weak and strong tie), bonding and bridging ties, and trust toward each tie were assessed. To do so, the questionnaire included both open-ended and closed questions. First, respondents were asked to indicate the number of persons from whom they have gained important new technology-related information including Web 2.0 technology within the last year. Second, to simplify the survey's complexity, they were asked to choose the four most helpful or influential people from whom they gained technology-related information or information for implementing it in their organization. Following this, a series of questions were given to respondents to identify the attributes of each influential tie in terms of the strength of ties, degree of bonding and bridging tie, and the degree of trust toward each tie. Next, the operationalization of each concept and its measurement are explained in detail.

Network size.

Network size refers to a total number of contacts from whom the actor gains, or talks

with about, technology-related information.

Tie strength.

Tie strength refers to the degree of intimacy. It is assessed by five dichotomous variables mainly adopted from Granovetter's (1973) and Williams' (2005) measurements:

a) family (or relatives) or not: is the person your family member or relative?
b) friend or other including acquaintance and co-worker: do you consider the person as a friend or other?
c) being invited to home or not: have you invited the person to your home or has the person invited you to theirs?
d) frequency of contact: do you see the person at least once every two weeks?
e) geographical (physical) distance: does the person live in the same city (or county) as you live?

As a tie includes more of the listed characteristics, the tie is considered to be a stronger tie, and vice versa for a weaker tie. The value of tie strength ranges from zero to five, and a DMO manager's degree of tie strength is represented by the average score of the influential ties indicated. However, if a tie was identified as being a family member or relative, this tie was considered as the strongest tie regardless of other variables. Regarding weak ties, an example of calculating the degree of tie strength is given in Table 3.3.

Table 3.3 **Example Calculations for Degree of Tie Strength per Individual Selected**

	Family/relative	Friend	Being invited	Meeting once every two weeks	Living in same city	Strength of each tie
Tie 1	No (1)	No (1)	Yes (0)	No (1)	Yes (0)	3
Tie 2	No (1)	Yes (0)	Yes (0)	No (1)	No (1)	3
Tie 3	No (1)	Yes (0)	No (1)	Yes (0)	Yes (0)	2
Tie 4	Yes (0)	-	-	-	-	0
The degree of tie strength: Sum of strength of each tie/number of ties indicated=(3+3+2+0)/4=2						

( ): coding value ; Higher score refers to weaker tie

Bonding and bridging ties.

Bonding ties refers to the degree of a tie's internality. As discussed in chapter two, it is further distinguished into two ties: a) a stronger bonding tie is when a DMO manager's tie is with an employee at the same organization, and b) a weaker bonding tie is when a DMO manager's tie is with a person working at another DMO. In terms of coding, a weaker bonding tie will be given one point, and two points for a stronger bonding tie. Thus, the degree or dependency of bonding ties is represented by the average score of the influential ties indicated by a manager. Therefore, the score of bonding ties ranges from a maximum of two to a minimum of zero. For example, if a DMO manager indicates three influential ties, and all the ties of a DMO manager are employees working at his or her organization, the degree of bonding ties is 2 {(2+2+2)/3}.

Bridging tie refers to the degree of a tie's externality. It is also divided into two ties: a) a stronger bridging tie is when the DMO manager's tie is a person working in a different industry (neither other DMOs nor the tourism industry), and b) a weaker bridging tie is when the DMO manager's tie is a person working at a tourism business but not a DMO. The way to measure the degree of bridging ties is same as the one for bonding ties. A detailed description is provided in Table 3.4 below.

To measure the degree of bonding and bridging ties, the managers are asked to answer the question "Is the person you indicated working ___"

a) at your organization?

b) at another CVB(DMO)?

c) in the tourism industry (e.g., hotels, travel agency, museum, etc) but not CVBs or DMOs?

d) in an industry other than tourism?

Table 3.4 **Example Calculations for Degree of Bonding and Bridging Ties per Individual Selected**

	Bonding ties		Bridging ties	
	Working at same CVB	**Working at other CVB**	**Working at tourism-industry**	**Working at other industry**
Tie 1	Yes	-	-	-
Tie 2	-	-	Yes	-
Tie 3	-	Yes	-	-
Tie 4	-	-	Yes	-
Score for each tie	2	1	1+1=2	0
The degree of bonding and bridging tie	**2+1/4 (number of ties)=0.75**		**2/4=0.5**	

Competency trust.

Competence trust is operationalized as the degree of a DMO manager's confidence in a person's technology-related knowledge. *Competence trust* was taken from the two top-loading items (Item "CT1" and "CT2" below) used by Chattopadhyay (1999), Levin and Cross (2004), Mayer and Davis (1999), and McAllister (1995). In addition, item "CT3" was added to measure more specific competence related to Web 2.0 technology. Therefore, it is measured by three items with a 7-point Likert scale ("1=strongly disagree to 7=strongly agree"):

CT1) I trust the person's competency in technology-related knowledge.

CT2) I believe that the person approaches his or her job with professionalism and dedication to technology.

CT3) I trust the person can provide helpful suggestions of Web 2.0 technology for my organizations.

Associational activity.

Associational activity is operationalized as the degree of participation in voluntary organizational activity. It is measured by the number of memberships a DMO manager has in various voluntary organizations: how many memberships in other organizations do you currently

have?

Interaction effect.

Interaction effect refers to the combined effects of variables on a dependent measure, or the combined effects of the characteristics of a DMO manager's ties and competency trust in each tie regarding perceptions about Web 2.0 technology. To measure the interaction effect of two variables, a series of new variables (interaction terms) was generated by multiplying the mean value of each tie and competency trust (Field, 2009; Pedhazur, 1997). The way to generate a series of new variables for testing interaction effects is explained in Table 3.5.

Table 3.5 **Example of Generating Variables for Testing Interaction Effects**

Ties	Strength of ties	Bonding ties	Bridging ties	Bonding Trust	Bridging Trust	Pooled Trust Mean
Tie 1	3	2	0	2	-	2
Tie 2	4	0	1	-	3	3
Tie 3	3	0	2	-	5	5
Tie 4	4	2	0	4	-	4
Average	(3+4+3+4)/4=3.5	(2+2)/4=1	3/4=0.75	(2+4)/2=3	(3+5)/2=4	(2+3+5+4)/4 =3.5
Coding value for interaction term	**Tie strength*Trust: 3.5×3.5=12.25** **Bonding ties*Trust: 1×3=3** **Bridging ties*Trust: 0.75×4=3**					

3.2.2 Perceptions and Attitudes

In terms of measurements related to perceptions and attitudes related to the technology adoption process, multi-item measurement scales for perceived usefulness, perceived ease of use, subjective norms, and attitudes were developed or adopted mainly based on existing scales as suggested by TRA (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975) and TAM (Davis, 1980,1986). TAM provides well-established measurements in terms of reliability and validity. However, the wording and content of some items was modified to fit the context of a DMO. Most items relevant to the technology adoption process were measured by a 7-point Likert scale

("1=strongly disagree" to "7=strongly agree"). In the case of measuring attitudes toward using technology, 7-point rating scale formats anchored with evaluative semantic differential adjective pairs (bipolar adjective scales) such as 'good-bad' or 'positive-negative' were used, which are recommended by TRA and TAM. More specific measures are provided below.

Perceived usefulness (PU).

Perceived usefulness refers to the degree to which adopting/using Web 2.0 technology is perceived to enhance an organization's job performance. It was measured by four items with a 7-point Likert scale ("1=strongly disagree" to "7=strongly agree") as suggested by Davis (1980), Davis, Bagozzi, & Warshaw (1989), and Venkatesh and Davis (2000). The four items achieved a Cronbach alpha reliability above 0.87 in their studies (note: Davis originally used six items to measure perceived usefulness in TAM, but in following studies, Davis et al. recommended the four items listed below. The two excluded items do not correlate well with other perceived usefulness items). Other than changes in wording to fit the specific technology (Web 2.0) and the DMO context studied here, no changes were made to the perceived usefulness scale from TAM.

PU1) Using Web 2.0 technology would improve my organization's performance.

PU2) Using Web 2.0 technology would improve my organization's productivity.

PU3) Using Web 2.0 technology would enhance the effectiveness of destination marketing and promotion.

PU4) Overall, I found Web 2.0 technology to be useful for my organization.

Perceived ease of use (PEU).

Perceived ease of use refers to the degree to which adopting/using Web 2.0 technology is

free of effort. It was measured by four items with a 7-Likert scale ("1=strongly disagree" to "7=strongly agree") adopted from Davis (1980) and Davis, Bagozzi, & Warshaw (1989). The four-items obtained reliability coefficients above 0.90 in both studies.

PEU1) Learning to operate Web 2.0 technology for my organization is easy.

PEU2) I find it easy to get Web 2.0 technology to do what I (my organization) want(s) it to do.

PEU3) It is easy for me to become skillful at using Web 2.0 technology.

PEU4) Overall, I find Web 2.0 technology easy to use.

Subjective norms (SN).

Subjective norms is operationalized as the person's perception of the social pressure from relevant others (salient referents) to adopt/use Web 2.0 technology. To measure subjective norms, the most important task is to identify the salient referent that DMO managers think is important. Given the reliance on the Internet as a main information source among customers, technology adoption studies have chosen pressure from customers as an important factor influencing technology adoption (Fuchs et al., 2009; Iacovou, Benbasat, & Dexter, 1995; Lim, 2008; Premkumar & Roberts, 1999; Slade & Van Akkeren, 2002). In particular, although not in the DMO context but in the hospitality context, Lim (2008) and Fuchs et al. (2009) also proposed that perceived pressure from customers was an influential factor for ICT adoption by hotels. There is no doubt that (potential) travelers are DMOs' main customers. Thus, this study chooses travelers as one of the salient referent groups. Besides the traveler-related item, this study also adopted two additional items suggested by Ajzen and Fishbein (1980) and Venkatesh and Davis (2000). Therefore, subjective norms are measured by three items with a 7-point Likert scale

("1=strongly disagree" to "7=strongly agree"). Two items (SN2 and SN3) were adopted from TRA , and Cronbach's alpha of two items were generally high in previous studies (e.g., above 0.90 in Ajzen and Fishbein, and Venkatesh and Davis, and above 0.88 in Taylor and Todd (2001):

SN1) I feel these days travelers think DMOs should provide travel information through Web 2.0 technology (e.g., Facebook, interactive maps, YouTube, etc).

SN2) People who influence my behavior at work think that a CVB (DMO) should use Web 2.0 technology for destination marketing and promotion.

SN3) Most people who are important to me in relation to my work think that a CVB (DMO) should adopt Web 2.0 technology for destination marketing and promotion.

Attitude toward Web 2.0 technology adoption (AT).

Attitude toward Web 2.0 technology adoption is operationalized as individuals' subjective evaluation (positive/negative or good/bad) of adopting Web 2.0 technology. As suggested by TRA and TAM, it was measured by four (7-point) bipolar adjective scales.

All things considered, using Web 2.0 technology for my organization is:

AT1) 'good-bad'

AT2) 'beneficial-harmful'

AT3) 'wise-foolish'

AT4) 'positive-negative'

Behavioral intention to use/adopt Web 2.0 technology (I).

'*Behavioral intention to use'* is operationalized as conscious plans to use/adopt Web 2.0 technology for destination marketing and the organization. It was measured by three items with a

7-point Likert scale ("1=extremely unlikely" to "7=extremely likely"):

I1) I intend to increase the use of Web 2.0 technology for my organization.

I2) I intend to put more effort in enhancing Web 2.0-related marketing and promotion.

I3) I intend to increase budget (including human resources wages) for Web 2.0 technology in the next 12 months.

Levels of DMOs' Web 2.0 technology adoption.

Levels of DMOs' technology adoption is operationalized as the intensity to which a DMO implements diverse Web 2.0 technologies for destination marketing and promotion. It was measured by the number of Web 2.0 technologies that the DMO is currently using for destination marketing and promotion. However, as mentioned before, since there are a variety of Web 2.0 technologies, it is necessary to identify several key Web 2.0 technologies that are most often used by DMOs. To do so, a preliminary study was conducted. In the preliminary study, an initial list of Web 2.0 technologies that were considered as useful for destination marketing and promotion was made, which includes: 1) Facebook, 2) Twitter, 3) Myspace, 4) Flickr, 5) YouTube or movable video or audio clips, 6) Blog, 7) Interactive map (e.g., Google, Yahoo, or Bing maps), and 8) RSS feed. Based on the list, official websites of 201 CVBs in the Midwest (Illinois, Michigan, Minnesota, Wisconsin, and Ohio) were investigated from Jan 1st to 15th, 2010. In Table 3.5, the average number of Web 2.0 technologies being used by CVBs was 1.84, implying a very low adoption rate, and Facebook turned out to be the most-used Web 2.0 technology by CVBs (79 CVBs out of 201 are currently using it), followed by Twitter, YouTube (including movable video and audio clips), and Flickr.

As Table 3.6 shows, all Web 2.0 technologies included in the initial list are currently

used by CVBs at different levels. Therefore, the final list included all technologies from the initial list (note: YouTube and movable video or audio clips are separated into the YouTube and Podcast categories in this study). Moreover, although it was not on the initial list, through further investigation, LinkedIn, TripAdvisor, and mobile applications were also added to the final list. Therefore, a total of 12 Web 2.0 technologies were given to respondents to measure the level of Web 2.0 adoption.

Table 3.6 **Frequency of Web 2.0 Technology Use**

	Facebook	Twitter	YouTube	Interactive Map	Flickr	RSS Feed	Blog	MySpace	Total Use
Frequency	79	76	73	60	32	28	17	5	370
Average	0.39	0.38	0.36	0.30	0.16	0.14	0.08	0.02	1.84
Total CVBs	201	201	201	201	201	201	201	201	201

3.2.3 Characteristics of Respondents and DMOs

The study also included a series of questions to identify the characteristics of respondents and DMOs. For characteristics of respondents, four questions were asked: a) gender, b) age, c) level of education, and d) length of work experience in the current organization and in the tourism industry. For characteristics of DMOs, three questions were asked: a) the number of full-time equivalents (FTEs), b) annual budget; c) level of operation: city, county, region, and state.

3.3 Data Analysis Method

This section discusses the methodology to test and address each of the research questions. As this study chose a different method of analysis to address each research question, the method is explained according to each research question.

3.3.1 Method of Analysis for Research Question 1

RQ 1: What are the characteristics of social ties (e.g., types of social ties—weak/strong and bridging/bonding ties, and the degree of trust toward each tie) that DMO managers rely on for gaining information relevant to tourism technology?

This research question aims to provide overall patterns and characteristics of DMO managers' relational ties relevant to technology-related information gain. To answer this question, the social network analysis approach is used. Social network analysis is commonly characterized as "a perspective or approach that considers interactions among social actors and the regular patterns of those interactions" (Monge et al., 2008, p. 8). Social network analysis functions as a diagnostic tool for a) facilitating effective collaboration within or between groups, b) supporting critical junctures in networks that cross functional, geographic or hierarchical boundaries, and c) enabling integration within groups following strategic restructuring initiatives (Cross et al., 2002).

There are two overarching approaches in social network analysis: whole network approach and personal (ego) network approach (Jeong, 2006; Wellman, 1983; Williams, 2005). Whole network analysis studies relationships linking all members of a population. "A basic strength of the whole network approach is that it permits simultaneous views of the social system as a whole and of the parts that make up the system" (Wellman & Berkowitz, 1988, p. 26). Thus the data for whole network analysis are collected on each tie and node. In contrast to the whole network approach, the personal network approach focuses more on the patterns and attributes of an individual's ties. Unlike whole network, the data are collected on one node labeled 'ego' and its ties (Williams, 2005).

However, it is believed that whole network analysis is not suitable for the context of this

study. In order to conduct the analysis, researchers must be able to define boundaries of a population, compile a list of all the members of this population, and collect a list of all the direct ties between members of this population. Given that the present study is interested in the diverse types of DMO managers' relationships, it is impossible to compile all relevant actors and confine the boundary of social networks. The whole network approach is beneficial if the study is conducted with a small population. Wellman (1983) also indicated that the major disadvantage of whole network analysis is that "analysts have been able to study only a few types of relationships in populations no larger than several hundred" (p.26).

For this reason, this study adopts the personal networks approach. Therefore, the analysis for Research Question 1 mainly displays the characteristics (attributes) of relational ties answered by DMO managers, rather than the patterns of connections between different managers.

In addition, according to the levels of technology use, DMOs were grouped (e.g., low, middle, and high adoption groups), and the analysis of variance (ANOVA) test was conducted to test whether there were significant differences in characteristics of DMO managers' social networks (tie strength, degree of bonding and bridging ties, network size, and the number of associational activities) with respect to these different levels of Web 2.0 adoption.

3.3.2 Method of Analysis for Research Question 2

RQ 2: What is the relationship between a DMO manager's social capital (networks) and the DMO's technology use?

This research question investigates the direct relationships between the properties of a DMO manager's social capital and the level of the DMO's technology use. That is, this research question tests hypotheses H1-H6. The direct impact of social capital on the level of DMO's

technology use was examined by using multiple regression analysis (note: the detailed procedure to use multiple regression is discussed in the following section).

3.3.3 Method of Analysis for Research Question 3

RQ 3: How does social capital affect a DMO's technology adoption process?

To address this research question, a series of hypotheses based on the research model in Table 3.1 were tested. The hypothesis testing was conducted using multiple regression analysis after testing basic assumptions for regression analysis (e.g., linearity, normality, and homoscedasticity).

"The strength of multiple regression lies primarily in its use, as a means of establishing the relative importance of independent variables to the dependent variable" (Bryman & Cramer, 2005, p. 110). Given that this study not only tested the effects of social capital-related factors, but also examined more influential factors on DMOs' Web 2.0 technology adoption, multiple regression analysis was considered suitable for this study. In addition, as part of the power of multiple regression is the ability to estimate and test interaction effects regardless of types of predictor variables (e.g., categorical or continuous) (Pedhazur, 1997), interaction effects of relational ties and competency trust on Web 2.0 adoption can be well analyzed by using the multiple regression method.

Construct validation and reliability for multi-item scales.

As this study includes several variables that are measured by multi-items, the test of validity and reliability for these multi-items scales needs to be conducted prior to conducting hypothesis testing. Two commonly used validation techniques were chosen for construct

validation: a) 'convergent and discriminant' and b) 'exploratory (common) factor analysis' (Segars & Grover, 1993). Convergent validity refers to the degree to which concepts or items that should be related theoretically are interrelated in reality. It is evidenced by the high magnitude of correlations between theoretically similar items. Conversely, discriminant validity refers to the degree to which concepts or items that should not be related theoretically are, in fact, not interrelated in reality. Thus, it is evidenced by the low number of item correlations between theoretically dissimilar items (Segars & Grover, 1993). Although there is no hard role in terms of a cut line of nonsignificant/significant correlations coefficient, in general construct validation is ensured when convergent correlations are higher than discriminant constructs; implying that scales or items are relatively good in discriminating between established factors. As another validation technique, exploratory factor analysis with varimax (orthogonal) rotation is often used to discover potential latent sources of variation and covariation in observed measurements. In general, scales with good measurement properties produce high factor loadings on the latent factors of which they are indicators (Sagars & Grover, 1993).

With regard to the reliability of scales, internal consistency reliability is assessed through the use of Cronbach's coefficient alpha. Cronbach's alpha is most popularly used in that it provides a measure of the internal consistency of the items forming a multi-item scale (Davis, 1980). In other words, it is a function of the average correlation among items (internal consistency) and the number of items (Nunnally, 1978). Thus, the value of Cronbach's alpha is determined from the intercorrelations of items measured. Cronbach's coefficient alpha ranges from -1 to 1, and values of 0.70 or higher are considered satisfactory to indicate reliability (Field, 2009).

3.4 Data Collection

Participants.

As explained in chapter one, this study chose the American Convention and Visitors Bureaus (CVB) as DMOs and managers of CVBs were chosen as key informants (note: the manager here refers to the head of the organization (e.g., director, executive director or president/CEO). More importantly, this study only surveyed managers in independent organizations (CVBs). Currently, the type of CVB can be divided into seven categories (Zach et al., 2010): independent organization, division of the Chamber of Commerce, part of city government, part of county government, division of economic development, part of state government, and other. However, except for independent CVBs, the CVB manager in the other types does not have full authority to develop and design their official website since in most cases the CVB's website serves as a part or sub-section of a bigger organization such as a government or Chamber of Commerce, rather than having an independent website server. In other words, the role of CVB manager in other types as a final decision maker may be limited. As an example, Owatonna Minnesota Area Chamber of Commerce and Tourism linked Facebook to their official website, but the content on Facebook is mixed with not only travel information but also community affairs or announcements (e.g., school district policy, employment tax, etc.) that are not closely relevant to travel. In this case, it was very difficult to decide whether the decision to adopt Facebook was made by a CVB manager or a manager from the Chamber of Commerce. Thus only the manager of independent CVBs and CVBs that have an independent website server were surveyed.

Total population (CVBs) of the study.

There is no unified or official directory where all American CVBs are listed. By studying American CVBs web-related innovations, Zach et al. (2010) estimated that there are approximately 1,800 CVBs that include not only independent CVBs but also other types of CVBs. The list of American CVBs was obtained by one primary source and two supplemental sources: a) official websites of state-level tourism offices, b) the Destination Marketing Association International (DMAI) and c) CVB associations at the state level. Currently most state-level tourism bureaus or offices (e.g., Illinois office of tourism) provide a list of CVBs in their state on websites. Therefore, this study used it as a primary source to acquire the list of total CVBs. However, in cases where some do not provide the list, the list from DMAI and CVB associations at the state level (e.g., Ohio Association of Convention and Visitor Bureaus: http://www.oacvb.org/members) were used. DMAI (http://www.destinationmarketing.org) provides lists of DMOs not only in America but also other countries. However, since there are also CVBs not included in DMAI's list, the list from DMAI was compared to one from CVB associations at the state level. Based on the list of CVBs obtained by three sources, a total of 1166 independent CVBs were chosen as a final list of American CVBs for this study.

Pre-test.

Before the actual collection of the survey, this study conducted a pre-test to increase the validity of the survey items and receive feedback related to developed questionnaires. For the pre-test, four experienced directors of CVBs in Illinois at different operational levels were interviewed (two at the city level, one at the county level, and one at the regional level) from January 5th, 2011 to January 14th, 2011. Regarding the pre-test procedure, they first completed

the questionnaire, and then provided feedback about the length of the questionnaire, the format of the scales, and question ambiguity. Based on feedback obtained, some wordings and questions were modified to ensure the clarity of the survey questions.

Estimating minimum sample size.

Two methods were used to estimate the desired sample size to ensure confidence in the results, and the appropriate use of multiple regression analyses. The formula below was used to estimate the sample size needed for this study:

Sample size= $\frac{\text{n}}{1+(\frac{\text{n}}{\text{population}})}$, where n= $Z^2 \frac{\text{P}(1-\text{P})}{c^2}$

Z= Z value (e.g., 1.96 for confidence level of 95%)
P=percentage picking a choice (true portion of factors in population; 0.5 used for sample size required)
c= confidence interval (e.g., 0.5= $\pm$5)

With a total of 1,166 CVBs, samples sizes needed were estimated at a 95% confidence level in Table 4.7 based on different confidence intervals. For confidence interval, this study chose the widely acceptable standard of 95% for the confidence interval (Field, 2009). According to Table 3.7, this study needs to obtain a minimum sample size of 289 to ensure reliable and generalizable results.

Table 3.7 **Estimation of Sample Size**

Confidence Interval	Confidence Level (%)	Population (n)	Sample Size needed (n)
5 (95%)	95	1,166	289
10 (90%)	95	1,166	89

Besides the estimation of sample size based on confidence level and population, *a priori* power analysis was also used to estimate the minimum required sample size for multiple regression. The analysis was carried out during the design stage of the study to estimate the

required sample size (Cohen, 1988; Field, 2009; Kraemer & Thiemann, 1987). The analysis required anticipated effect size, number of predictor variables, alpha level, and desired statistical power. By conventions, alpha level of 0.05 and a desired power of 0.8 are likely recommended (Cohen, 1998, 1992; Field, 2009). For anticipated effect size, this study used Cohen's f^2 method, which measures the effect size of multiple regression and F-test for ANOVA; the method can be mathematically written as:

$$f^2 = \frac{R^2}{1-R^2}$$,where R^2 is the squared multiple correlation.

Cohen (1988,1992) defined a small effect size to be f^2=0.02, a medium effect size to be f^2=0.15, and large effect size to be f^2=0.35. For *a priori* power analysis, G-Power statistical software was employed, and Table 3.8 shows the minimum required sample sizes for multiple regression analyses based on different effect sizes.

Table 3.8 **Minimum Sample Size for Multiple Regression**

Effect Size	Alpha Level	Statistical Power	Number of Predictors	Minimum Sample Size
Small (0.02)	0.05	0.8	11	847
Medium (0.15)	0.05	0.8	11	122
Large (0.35)	0.05	0.8	11	59

*****The number of predictors: social capital-related variables (7), control variable (1), and interaction terms (3)

Given that this study utilized relatively new variables related to social capital, was possible that collected data would not reach the level of a large effect size (0.35). Hence, by using the medium effect size (f^2=0.15), this study considered 122 responses as the minimum required sample size for multiple regression analysis.

Based on two estimations of sample size, it was concluded that this study needed to obtain at least 289 responses for both acceptable results and the use of multiple regression analysis.

Sampling procedure and response rate.

Data was collected using the online survey method, which was chosen for its ability to quickly and economically reach a large sample. The survey was sent electronically to DMO managers and conducted from January 18th, 2011 to January 29th, 2011. Multiple ways to increase response rate were used. First, as an incentive, managers were encouraged to complete the survey to be eligible to win one of three iPads. Second, a pre-notification email was sent on January 13th, and two follow-up reminder emails were sent to those who had not responded on January 21th and 26th. Second, the timing of the email is considered an important factor influencing response rate (Babbie, 2008). In general, as response rates and times are best for web surveys sent out between 6 a.m. and 9 a.m., at the beginning of the work day, and not on Mondays, the survey and reminder e-mails were sent between these times.

A total of 1,166 survey invitation letters were sent, and 27 invitations were returned. To these invitations, 314 CVB/DMO managers participated in the survey, yielding a response rate of 27.0 percent. After a review of the data, 11 incomplete responses were eliminated. Therefore, 303 usable responses were included in the data analysis, for a net response rate of 26.0 percent, which satisfied the minimum sample size (289) required for this study.

With a total of 303 samples, the next chapter first presents basic information about respondents and their organization, and then the results of the analyses of the research questions will be discussed.

CHAPTER IV

RESULTS

This chapter presents the analysis of the hypotheses stated in chapter three. The first section provides background information about respondents and their organization. The second section describes the types of social networks that respondents used for information gain. The last section presents the results of the hypotheses analyses of the relationship between social capital and technology use.

4.1 Background Information

This section presents background information about the respondents and their organization through descriptive statistics. The information comprises three dimensions. The first is basic demographic information about the respondents, such as age, gender, education and years of service in the tourism industry. The second part considers the characteristics of the organizations, which includes annual budget, number of employees, and the level at which the organization operates, such as city, county, or state. The last part presents the extent to which DMOs are using Web 2.0 technologies for destination marketing and promotion and includes the number of Web 2.0 technologies being used and the frequency of different Web 2.0 technologies used.

4.1.1 Respondents and Organization

With regard to the demographic profile of respondents, Table 4.1, not surprisingly, shows that the majority of DMO directors (71.3%) were female. Given that only 9.4% of positions at a Vice President level or above in the U.S. are occupied by women (according to a

study conducted by the Catalyst Corporation [2010]), the percentage of women at the director level is relatively high within the DMO context compared to other industries. The majority (98.7%) have obtained some education beyond the college degree, which is generally high.

They were, on average, 47 years old. Over one third of respondents (36.8%) were in the age group of 50 to 59 years. According to HireSmart (n.d), the average age of CEOs or executive directors in the U.S. is 56 years old. On the basis of the data, it seems that the average age of respondents in the DMO context was younger, but the gap between the ages of DMO directors and the national average may be caused by directors who belong to higher-level organizations (e.g., CVB directors at the division of Chamber of Commerce) who were also included in the study.

In the area of work experience, respondents have worked in the tourism industry for the last 15 years and around 8 years in their current organization. Over two fifths of respondents reported having more than 15 years of working experience in the tourism industry. Interestingly, almost one quarter had less than five years of experience in the current organization. This may mean that the executive position of CVBs does not necessarily require tourism-based experience. The position may also allow for the entrance of persons who have experience in different fields such as marketing and human resources management. Another possible reason can be explained by the existence of many small CVBs. As shown in Table 4.2, 23.4% of CVBs have less than two employees. Thus, it may be a plausible expectation that such small organizations have younger directors in comparison to relatively bigger CVBs.

Table 4.1 **Demographic Profile of Respondents**

Item	Frequency	Percent
Gender		
Male	214	28.7
Female	86	71.3
Total	300	100
Age (M=47.3)		
20 to 29	18	6.1
30 to 39	60	20.3
40 to 49	73	24.7
50 to 59	109	36.8
60 and above	36	12.2
Total	296	100
Education		
High School/GED	4	1.3
Some College	50	16.6
4-year College Degree	179	59.5
Graduate Degree	66	21.9
Doctoral Degree	2	0.7
Total	301	100
Length of Work Experience in the Tourism Industry (M=15.2)		
Under 5	72	24.1
5 to 10	48	16.1
11 to 15	48	16.1
16 to 20	42	14.0
21 to 30	61	20.4
31 and above	28	9.4
Total	299	100
Length of Work Experience in Current Organization (M=8.4)		
Under 3	82	27.7
4 to 6	74	25.0
7 to 10	48	16.2
11 to 20	72	24.3
21 and above	20	6.8
Total	296	100.0

Table 4.2 **Organization Characteristics**

Item	Frequency	Percent
Level of Operation		
City level	91	30.0
County Level	163	53.8
Regional level	40	13.2
State level	9	3.0
Total	303	100.0
Full-time Equivalents (M=7.02)		
Under 2	71	23.4
2 to 5	123	40.6
6 to 9	43	14.2
10 to 19	41	13.5
20 and above	25	8.3
Total	303	100.0
Annual Budget (M=$1,669,038; Median: $553,000)		
Less than $100,000	26	8.6
$100,001-$250,000	73	24.1
$250,001-$500,000	50	16.5
$500,001-$750,000	30	9.9
$750,001-$1,000,000	31	10.2
$1,000,001-$2,000,000	38	12.5
$2,000,001 to $3,000,000	15	5.0
$3,000,001 to $4,000,000	14	4.6
$4,000,001 and above	26	8.6
Total	303	100.0

Basic characteristics of the respondents' organizations are presented in Table 4.2. As other studies (Gretzel & Fesenmaier, 2004; Zach et al., 2010) have indicated, this study also confirmed that most DMOs in the U.S. are small to medium-sized organizations. According to the designations set by the Small Business Administration (SBA), a business that has fewer than 50 employees is classified as a small business. Based on the designation, all DMOs but four in this study are considered as small-scale businesses. Nearly 78% of the DMOs had fewer than 10 employees. Interestingly, 23.8% of them had less than two full-time equivalents (FTE), and

around 8% of DMOs had more than 20 FTEs. Over half (53.8%) of the studied DMOs operated at the county level, nine at the state level, and the remainder at the local level. Although the average annual budget was around $1,669,000, nearly half (49.2%) of the CVBs had budgets of $500,000 or less; and approximately one quarter of the CVBs (24.1%) had an annual budget between $100,001 and $250,000; whereas almost one third (30.7%) had budgets exceeding $1 million. The median budget was $553,000.

4.1.2 Web 2.0 adoption by DMOs

In this section, the degree to which CVBs included in the study are using Web 2.0 technology is presented. As explained in chapter three, a total of twelve Web 2.0 technologies were included in the list to be studied. Table 4.3 presents the frequency based on the numbers of Web 2.0 technologies adopted. The average number of Web 2.0 technologies adopted is 6.80 and there was only one DMO that did not use any of the Web 2.0 technologies on the list. The analysis reveals that nearly 45% of CVBs adopted at least eight Web 2.0 technologies and almost 25% (23.1) of CVBs were using six or seven. However, it appears that this new result is quite different from the preliminary study conducted from January 1st to 15th, 2010 (see Table 3.6 in chapter three). Although the two results cannot be statistically compared because of different samples and the different methodology used to measure technology use, it is worthwhile to further investigate the two results for a better understanding of the change in Web 2.0 adoption by CVBs.

For a more reliable comparison, first, only 57 CVBs from IL, MI, MI, OH, and WI were selected. The preliminary study only included eight Web 2.0 technologies, while the current study utilized 12. To recalculate the mean, only those eight technologies that appeared on both lists were used. Table 4.4 shows a simple comparison of the two results in different time periods.

In the preliminary study, the average usage was 1.84 for the eight technologies while it is 4.93 in the current study. The average number has increased by more than 2.5 times. There may be two possible explanations for this gap. The simplest explanation may be that CVB directors with low levels of technology adoption might have been reluctant to participate in this survey. However, the concept of innovation diffusion proposed by Rogers (1983) may provide a more plausible explanation. As shown in Figure 4.1, the adoption rate generally follows an S-shaped curve; that is, slow at the beginning, more rapid as adoption increases, and then leveling off. Therefore, it seems that Web 2.0 adoption by CVBs may be in the so-called early stages, which includes the groups of early adopters and the early majority. Thus, it may be argued that Web 2.0 adoption by CVBs might have rapidly increased in the past 12 months.

Table 4.3 **Frequency of the Number of Web 2.0 Technologies Adopted by DMOs (2011)**

Number of Use	Frequency	Percent
0	1	0.3
1 to 3	44	14.5
4 to 5	53	17.5
6 to 7	70	23.1
8 to 10	110	36.3
11 to 12	25	8.3
Total	303	100.0

*Average Number of Actual Use=6.80

Table 4.4 **Comparison of Web 2.0 Use**

Study Period	Average Number	Number of CVBs
Jan 1st to 15th, 2010	1.84	201
Jan 18th to 28th, 2011	4.93	57

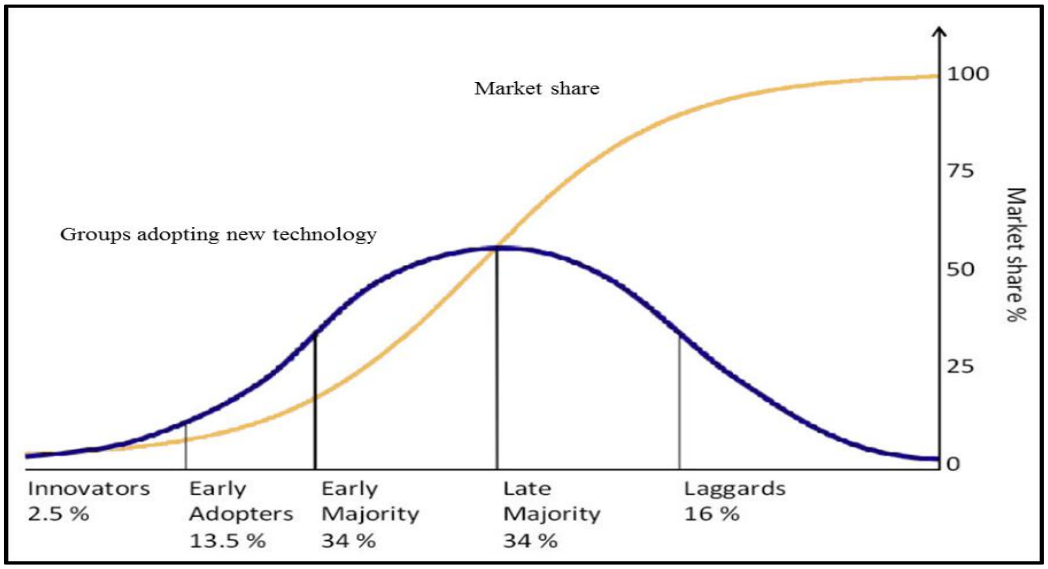

Figure 4.1 **Diffusion of Innovation Graph by Roger (1983)**

Table 4.5 shows the frequency of use based on the types of Web 2.0 technologies adopted by CVBs. Facebook was the most used technology, followed by Twitter and YouTube, Interactive Maps, and Flickr. Almost all DMOs but 13 were using Facebook for their marketing and promotion. Regardless of the usefulness of technologies, some technologies (e.g., Podcast, RSS feed, and Foursquare) that have been relatively less used by DMOs may be, to some extent, associated with the "age" of technologies. In other words, these technologies were introduced relatively later than more frequently used Web 2.0 technologies such Facebook or YouTube. Thus, these technologies may need more time to gain popularity among DMOs. As described in Figure 4.2, four Web 2.0 technologies: Facebook, Twitter, YouTube and Interactive Maps, explain half of the total number of Web 2.0 technologies adopted by CVBs.

According to the *Social Media Industry Marketing Report* by Stelzner (2010), Facebook, Twitter, MySpace and LinkedIn are often highly ranked as the most-used Web technologies for business marketing. However, in the DMO context, as Table 4.5 shows, YouTube, Interactive

maps and Flickr were ranked in the top five. This result well represents the ways in which the tourism industry is different from others. For effective destination marketing, it is very important for DMOs to present not only descriptive destination information, but also the experiences of other travelers at their destination. In this sense, it seems that CVB directors agree on the usefulness of these media sharing websites and interactive maps and consider them to be effective tools in helping potential travelers visualize both the tourism facilities and the experiences of other travelers.

Table 4.5 **Frequency of the Types of Web 2.0 Technologies Adopted**

Technologies	Frequency of Use	Percent of Total	Percent of DMOs using
Facebook	291	14.1	96.4
Twitter	250	12.1	82.8
YouTube	250	12.1	82.8
Interactive Map	238	11.6	78.8
Flickr	191	9.3	63.2
Blog	171	8.3	56.6
LinkedIn	143	6.9	47.4
RSS feed	119	5.8	39.4
Mobile Applications	119	5.8	39.4
TripAdvisor	115	5.6	38.1
Podcast	100	4.9	33.1
MySpace	63	3.1	20.9
Total	2050	100	

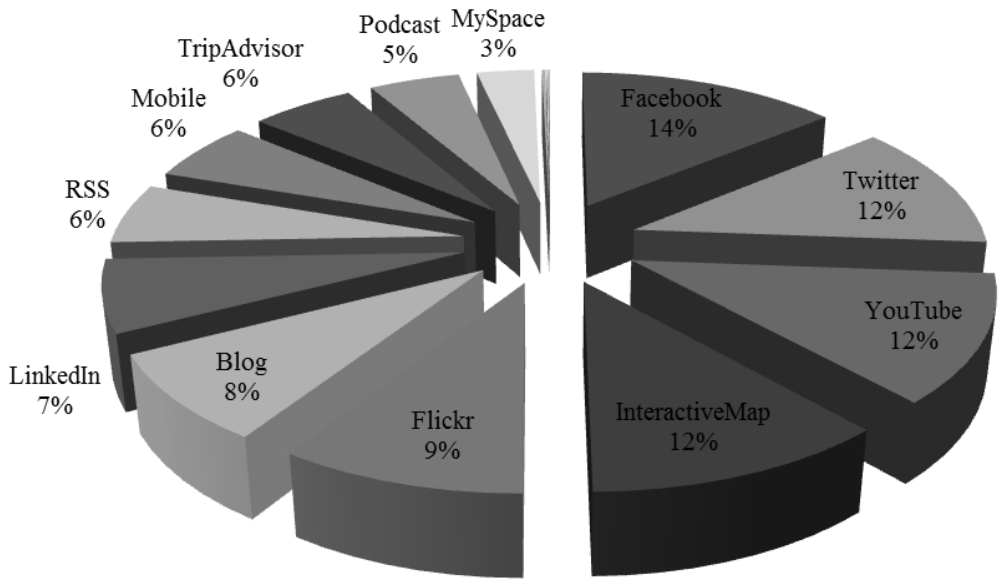

Figure 4.2 **Web 2.0 Adoption Frequency Chart**

In sum, this provided information about the basic structure of CVBs in the U.S. It showed that most CVBs are small-sized organizations that are operated with limited budgets and a relatively small number of employees. For DMOs, it may be an important task to provide potential travelers with the visualized images of their attractions, including tourism facilities (e.g., museums). Thus, the popularity of some Web 2.0 technologies (e.g., YouTube and Interactive Maps) among those adopted by CVBs may be attributed to the unique characteristics of the DMO. Interestingly, it seems that recent Web 2.0 adoption by CVBs may be rapidly increasing. This implies that Web 2.0 adoption by CVBs may be in the early stages.

In the following section, results of analyses are presented to address three research questions related to the relationships between directors' social capital and the level of Web 2.0 adoption.

4.2 Results of Research Question 1

RQ1: What are the characteristics of social ties that DMO managers rely on for gaining information relevant to tourism technology?

This section addresses research question 1, which mainly describes the characteristics of the respondents' social networks that they use for technology-related information gain. In addition to descriptive analysis, this section compares the characteristics of respondents' social ties according to different levels of technology adoption. As this section focuses more on directors' network-related components (e.g., tie strength, bonding and bridging ties, network size and the number of associational activities), the subjective norms and competency trust are excluded.

Regarding tie strength as presented in Table 4.6, the mean value was 3.89. Note that tie strength is measured by five dichotomous variables and the value of tie strength ranges from 0 to 5. A higher number means that the strength of the tie is weaker (see p.106 for detailed descriptions of tie strength). Thus, the 3.89 value implies that the ties that directors had for information gain were rather weak. Table 4.7 provides more detailed descriptions related to tie strength. A total of 1,027 ties were identified by 303 respondents, which means that each respondent, on average, indicated 3.39 persons as their most helpful information providers. Among those 1,027 ties, only 42 were identified as family members. The majority of ties (87%) were indicated as "others" including acquaintances and co-workers rather than friends. Nearly one fifth of total ties have been invited to respondents' homes or vice versa. In terms of frequency of meeting and geographical distance, 34% of ties were reported as being seen at least once every two weeks, and 37% of them lived in the same city or county as the respondent. Interestingly, the frequency of the last two criteria shows a relatively higher score than the other

criteria. This gap can be explained by the portion of co-worker ties. As shown in Table 4.8, around 20% of ties were indicated to be a person working at the same organization, and they were likely to be identified as a co-worker instead of a friend. Thus it is very possible that if a tie was a person working at the same organization, it was likely that both would meet in person often and live in the same region.

In terms of bonding and bridging ties, the data shows that the directors relied more on bridging ties (M=1.12) than bonding ties (M=0.52) to gain technology-related information: mean difference= 0.59, Sig. <0.05 (note: the highest score for both bonding and bridging ties is 2; see p.105 for an example calculation for the mean of bonding and bridging ties.) Further analysis shown in Table 4.8 indicates a more obvious reliance on bridging ties on the part of directors. Half of directors reported that they had at least one person working in the tourism industry, and approximately one quarter (77%) of them had at least one person working in an industry other than tourism. Moreover, bridging ties accounted for 44.2% of total ties indicated by CVB directors, followed by persons in the tourism industry (23.1%). Around two thirds of total ties were bridging ties. Respondents' dependency on bridging ties can be explained by a lack of employees and the CVB's unique role. As shown in the previous section, most CVBs are small-sized organizations with a small number of employees. Hence, CVB directors might find limited useful information from their employees, which in turn leads them to become involved in external relationships. Another explanation would be because of the characteristic of the CVB job. As explained in chapter one, a destination consists of a variety of businesses and organizations such as hotels, entertainment facilities, and public organizations (Grängsjö & Gummesson, 2006). Undoubtedly, a common priority of DMOs is to provide travelers with information about these other businesses. To do so, it is necessary for CVBs to have cooperative

relationships with diverse business sectors in their region. Therefore, it seems that the very nature of CVBs means that directors have the chance to make more bridging ties and have relationships with others in diverse fields.

Respondents, on average, were involved in around six associational activities. On average, the size of the network from which respondents gained important technology-related information was about eight people.

Table 4.6 **Mean of Social Network-related Variables**

Variables	Mean	Std. Deviation
Tie Strength	3.89	0.95
Bonding Degree	0.52	0.55
Bridging Degree	1.12	0.58
Associational Activity	5.92	4.80
Network Size	7.94	8.82

*N=303

Table 4.7 **Frequency of variables used to measure Tie Strength**

Items	N	Percent
Family (or relatives)	42	4.0
Friend	143	13.0
Being invited to home	203	19.0
Meeting at least once every two weeks	351	34.0
Live in the same city (or county)	382	37.0

*Total number of ties: 1,027

Table 4.8 **Frequency of Bonding and Bridging Ties**

Tie	Information Sources	Number (1) /(percent)	Number (2) /(percent)
Bonding ties	Person working at same organization	192 (18.7)	137 (45.0)
	Person working at other CVBs	144 (14.0)	112 (37.0)
Bridging ties	Person working in tourism industry	237 (23.1)	152 (50.0)
	Person working in other industry	454 (44.2)	233 (77.0)
	Total	1027	303

*Number (1): frequency of each tie as indicated by directors
*Number (2): frequency of each tie among all directors

Although the descriptive statistics above are related to directors' social networks, and they help us to understand the overall patterns of their social network ties, it also provides some insight about how the surveyed directors' social networks differ with respect to the level of Web 2.0 technology adoption. That is, it would be a plausible expectation that directors with higher levels of Web 2.0 adoption may show different patterns and characteristics in their social networks from those with lower levels of Web 2.0 adoption. Therefore, to investigate the differences in directors' social networks with respect to these different levels of Web 2.0 adoption, this study divided the respondent groups into three groups of approximately equal size: low, middle, and high adoption groups. The low adoption group included approximately the lowest 32.3% of respondents on the number of Web 2.0 technologies adopted (between 0 and 5). Those adopting between 6 and 8 (approximately 37.4% of respondents) were included in the middle group and the upper 30.3% of those on actual use (between 9 and 12) were assigned to the high adoption group. With these three groups, an ANOVA (Analysis of Variance) test was conducted to examine the differences of each group with reference to the level of Web 2.0 adoption.

There is the assumption that when using the ANOVA test, the variances of each group are equal, which is the so-called homogeneity of variance assumption. Thus, prior to conducting the ANOVA test, the Leven's test was conducted to see if the data meets the assumption. However, Leven's test on the variable of associational activity and network size rejected the null hypothesis that the variances of each group are the same (Leven statistic for associational activity=4.516, $p<0.01$; Leven statistic for network size=5.377, $p<0.05$), which means the *F*-ratio used to test the significant difference of each group's mean value in ANOVA cannot be used for associational activity and network size. However, there exists an alternative version of the *F*-ratio that can be used when the homogeneity of variance assumption is violated: Brown-

Forsythe's *F* and Welch's *F* (Field, 2009). Therefore, further analysis for the Brown-Forsythe *F* and Welch's *F* test was conducted and Table 4.9 shows that the difference of each group in associational activity and network size is significant in both test statistics. Table 4.10 presents the summary of the ANOVA with other variables. In addition, Table 4.11 shows the results of the *post hoc* tests (by using Tukey's HSD) to compare all groups of respondents with each other. The results reveal that there are significant differences in the degree of bonding ties, the number of associational activities (that is, the number of activities they engage in, such as organizations, groups, etc.), and the network size among the three groups; while no significant difference was found in tie strength and the degree of bridging ties.

Table 4.9 **Test of Welch *F* and Brown-Forsythe *F***

	Test	Statistic	df1	df2	Sig.
Associational Activity	Welch	9.520	2	195.95	0.00
	Brown-Forsythe	8.306	2	286.29	0.00
Network Size	Welch	4.864	2	197.92	0.01
	Brown-Forsythe	3.833	2	271.30	0.02

Table 4.10 **Summary of ANOVA test**

Item	Adoption Level	Mean	St. Dev.	Number of cases	F ratio	Welch's F
Tie Strength	Low	3.99	0.98	98	0.779	-
	Middle	3.85	0.86	112		
	High	3.84	1.02	93		
Bonding Degree	Low	0.42	0.48	98	3.427*	-
	Middle	0.54	0.57	112		
	High	0.60	0.58	93		
Bridging Degree	Low	1.14	0.56	98	0.201	-
	Middle	1.12	0.57	112		
	High	1.09	0.61	93		
Associational Activity	Low	4.50	3.85	98	-	9.520**
	Middle	6.06	5.13	112		
	High	7.24	4.93	93		
Network Size	Low	5.98	6.79	98	-	4.864**
	Middle	8.84	10.98	112		
	High	8.91	7.42	93		

*=p<0.05, **=p<0.01

Table 4.11 ***Post hoc* Tests**

Item	Adoption Level (1)	Adoption level (2)	Mean difference (1-2)
Bonding Degree	Low	Middle	-0.117
	-	High	-0.179*
	Middle	Low	0.117
	-	High	-0.062
	High	Low	0.179*
	-	Middle	0.062
Associational Activity	Low	Middle	-1.563*
	-	High	-2.737*
	Middle	Low	1.563*
	-	High	-1.174
	High	Low	2.737**
	-	Middle	1.174
Network Size	Low	Middle	-2.859
	-	High	-2.931*
	Middle	Low	2.859
	-	High	-0.072
	High	Low	-2.931*
	-	Middle	0.072

*=p<0.05, **=p<0.01

For a better understanding about the patterns of directors' social networks, Figures 4.3, 4.4, and 4.5 below provide the visualized graphs related to the difference of each group in the variables of social networks. Regarding bonding and tie strength, it can be seen in Figure 4.3 that the high adoption group had a higher degree of bonding ties than the low adoption group. Although a significant difference was not found in tie strength, the graph shows that respondents in the high adoption group tended to have higher degree of bonding ties, and their tie strength is relatively stronger than the low adoption group (note: larger circle size suggests a weaker tie). Regarding tie strength and bridging degrees, Figure 4.4 shows that as the level of adoption is higher, the degree of bridging ties tends to be relatively lower while the strength of the tie is stronger.

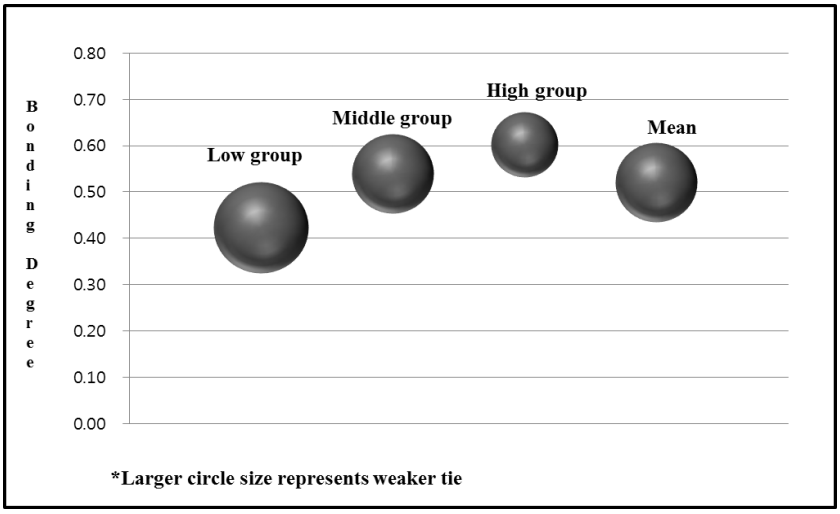

Figure 4.3 **Bonding and Tie Strength**

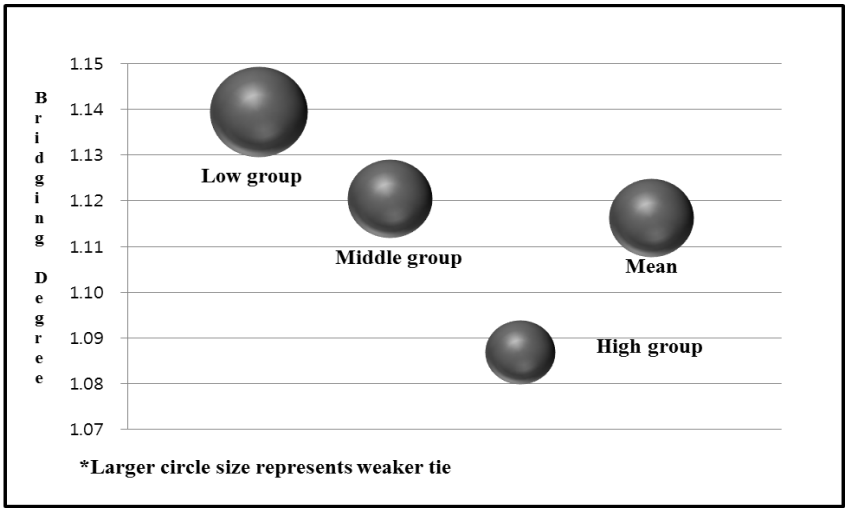

Figure 4.4 **Bridging and Tie Strength**

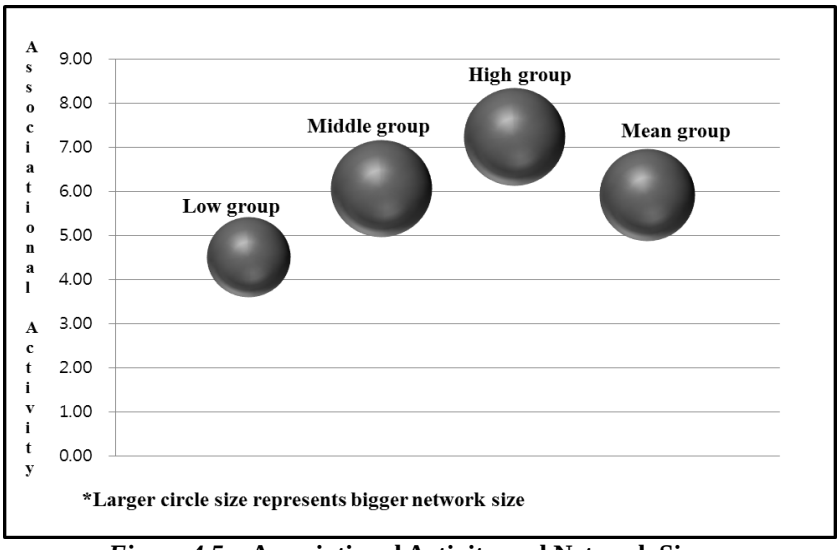

Figure 4.5 **Associational Activity and Network Size**

This is an interesting result when it is compared to the overall pattern of directors' social networks presented in the previous section. Table 4.8 shows that directors highly depended on bridging ties for technology-related information. However, when it comes to the level of adoption, Figure 4.3 reveals that the higher adoption group involves a relatively higher degree of bonding ties and lower level of bridging ties. It seems that bonding ties had a stronger relationship with Web 2.0 technology adoption by CVBs, but because of non-significant statistics on bridging ties and tie strength, a solid conclusion about the impacts of different types of social networks cannot be drawn here. However, the multiple regression analysis conducted to test the direct impacts of directors' social networks on the CVBs' technology adoption (presented in the next section) is expected to provide more robust evidence on the different impacts of social networks. Therefore, the discussion about this issue will be put aside for the moment. Figure 4.5 describes different patterns of associational activity and network size. As expected, the high adoption group showed the larger network size and the higher numbers of associational activity. Significant difference was found in both variables.

In sum, the descriptive analysis about the CVB directors' social networks revealed that they relied more on bridging ties in gaining technology-related information rather than bonding ties, and the strength of ties they had was closer to that of a weaker tie. However, when the characteristics of ties are compared according to the different levels of Web 2.0 adoption, it appears that the high adoption group had a higher degree of bonding ties, a lower degree of bridging ties, and stronger ties when compared to the low adoption group. Although the results above help to explain the bigger picture of the CVB director's social networks and their effects on information gain, the results provide little information about the actual impacts of social networks on technology adoption. That is, the dynamic patterns of directors' social ties inevitably

require further analyses to understand what types of social networks had a stronger influence on technology adoption and whether the social networks that the directors were involved in had actual influences on adoption. Therefore, the following section tries to address the direct impacts of social capital including the components of social networks on CVBs' Web 2.0 technology adoption.

4.3 Results of Research Question 2

RQ2: What is the relationship between a DMO manager's social capital (networks) and the DMO's technology use?

For research question 2, multiple regression analysis was performed on the variables of social capital to test the hypothesized impact on technology adoption proposed in the conceptual model: tie strength, bonding and bridging ties, trust, subjective norms, network size, and associational activity. Besides social capital-related variables, considerable research has indicated that organization size is one of the important predictors in technology adoption by an organization (Jeyaraj et al., 2006; Zach et al, 2010; Zheng, 2006). Therefore, the variable of organization size measured by annual budget was included as a control variable to improve the accuracy of the estimated effects of the social capital variable on Web 2.0 adoption.

4.3.1 Reliability and Construct Validity

Among social capital-related variables, there are two multi-item scales: competency trust and subjective norms. Thus, before performing the regression analysis, the reliability and construct validity on the two variables were assessed. To do so, a principal component analysis of the factor analysis was first conducted on the six items using the Varimax rotation method.

Note that with regard to competency trust, this study asked respondents to choose up to four important persons from whom they gain technology information and then to evaluate competency trust in every person. All respondents in the sample indicated at least one important person, which means that they all responded on items to measure competency trust at least once. Therefore, the value of competency trust about the first person that respondents indicated was chosen for the reliability and validity test.

Table 4.12 presents the summary of the results. The Kaiser-Meyer-Olkin (KMO) measure confirmed the sampling adequacy for further analysis, KMO=0.76, which is well above the recommended limit of 0.5 (Field, 2009; Kaiser, 1974). As expected, two components were extracted: trust and subjective norms, and in combination this explained 88.13% of the total variance (for more detailed descriptions of trust and subjective norms, please see the method section, p.105-109).

For the reliability of measurements, Cronbach's alpha on two scales (Table 4.12) was used to assess the internal consistency of the items forming trust and subjective norms. As indicated in the methods section, the base level for minimum reliability was set at 0.70 for the measurements of each variable and this was surpassed for both trust and subjective norms, with reliabilities generally exceeding 0.90. Regarding construct validity, Table 4.13 presents an inter-item correlation matrix as the major source of data used to assess convergent and discriminant validation. For convergent validity, items that measured trust correlated highly with one another ranging from 0.93 to 0.96. The items measuring subjective norms also showed high correlations ranging from 0.65 to 0.76. With regard to discriminant validity, it is obvious that items for trust correlated more highly with other trust-related items than items that were intended to measure subjective norms. That is, there is strong evidence that the two sets of measures are discriminated

from each other. Overall, it appeared that the pattern of intercorrelations of items strongly supported convergent and discriminant validation.

Table 4.12 **Reliability for Competency Trust and Subjective Norms**

Factors	Loadings	Eigenvalues	% of variance	Cronbach's α
Trust		2.88	48.01	0.88
CT3	.977			
CT1	.972			
CT2	.983			
Subjective Norms		2.41	40.12	0.97
SN2	.863			
SN3	.916			
SN1	.899			

KMO=0.76, $\chi 2$=1834.27, p<0.00

Table 4.13 **Inter-Item Correlation Matrix of Trust and Subjective Norms**

	CT1	CT2	CT3	SN1	SN2	SN3
CT1	1.00	-	-	-	-	-
CT2	0.93	1.00	-	-	-	-
CT3	0.96	0.94	1.00	-	-	-
SN1	0.14	0.15	0.14	1.00	-	-
SN2	0.14	0.13	0.14	0.69	1.00	-
SN3	0.11	0.11	0.10	0.65	0.76	1.00

4.3.2 Multiple Regression for Social Capital and Actual Web 2.0 adoption

Table 4.14 presents the descriptive statistics about actual Web 2.0 use and independent variables including competency trust and subjective norms. Note that the annual budget, used to measure and determine the size of the organization and network size, exhibited a highly right-skewed distribution of responses, and was transformed by taking logarithms in order to improve the distribution and make it more symmetric. The competency trust presented in Table 4.14 is a pooled mean value from each tie that respondents indicated as an important person. As shown in the table, the mean values of competency trust and subjective norms were generally high. It may

mean that directors perceived rather strong social pressure about Web 2.0 technology adoption from their networked people.

Table 4.14 **Descriptive Statistics of Social Capital**

	Mean	Std. Deviation
Number of Actual Use	6.78	2.84
Size of Organization	5.76	0.61
Network Size	0.74	0.38
Tie Strength	3.89	0.95
Bonding Degree	0.52	0.55
Bridging Degree	1.12	0.58
Competency Trust	6.29	1.35
Subjective Norms	6.16	1.10
Associational Activity	5.91	4.80

*N=303

Table 4.15 shows the correlations among independent and dependent variables. All variables, except for bridging ties and competency trust, showed significant correlations with the levels of Web 2.0 adoption. The correlation coefficient between tie strength and actual adoption level is significant, which means that as the stronger the tie, the higher the level of adoption is or vice versa. Consistent with the ANOVA test presented in the previous section, the degree of bonding tie positively correlated with the level of actual use. Although competency trust did not show any significant relationship to types of social networks, an interesting result was found. As indicated in the literature review section, social capital-related research often assumes that strong ties are based on stronger trust (Levin & Cross, 2004). However, this study did not find significant relationships between trust and tie strength. Even though this study could not prove that weaker and bridging ties can also hold strong trust as well, as Levin and Cross (2004) and Mu et al., (2008) discussed, the finding lends weight to the argument that strong ties do not necessarily hold strong trust.

The correlation tabulation in Table 4.15 was also used to check whether or not the data violated the assumption of no multicollinearity for the use of regression analysis. The multicollinearity occurs when regression uses two variables in a prediction that overlap completely or almost completely with one another (Keith, 2005). If there is no multicollinearity in the data, then no substantial correlations (r<0.9) between predictors should exist (Field, 2009). In the data, bonding and bridging ties are rather highly correlated with each other (r=-0.84), which may indicate the violation of the no multicollinearity assumption. Given that the respondents' ties were divided into either bonding or bridging ties, the rather high degree of correlation is not a surprising result. The correlation coefficient, -0.84, is still below, but close to, the threshold of 0.9 which is the recommended cut-line by Field. Therefore, what follows is further analysis on the multicollinearity issue.

Table 4.15 **Correlations between Social Capital and Actual Use**

	AU	**OS**	**NS**	**TS**	**BT**	**BRT**	**CT**	**AA**	**SN**
Actual Use (AU)	1.00								
Organization Size (OS)	0.44**	1.00							
Network Size (NS)	0.25**	0.14*	1.00						
Tie Strength	-0.11*	-0.04	0.05	1.00					
Bonding Tie(BT)	0.17**	0.23**	-0.01	-0.34**	1.00			.	
Bridging Tie (BRT)	-0.07	-0.15**	-0.05	0.17**	-0.84**	1.00			
Competency Trust (CT)	0.02	0.04	0.01	-0.04	-0.05	0.10	1.00		
Associational Activity (AA)	0.25**	0.14*	0.13*	-0.01	-0.01	0.03	-0.14*	1.00	
Subjective Norms (SN)	0.22**	0.17**	0.12*	0.03	0.05	-0.04	0.17**	0.00	1.00

*=p<0.05, **=p<0.001

Table 4.16 presents the summary of the regression model. Including the size of organization as a control variable, a total of eight social capital-related variables were regressed by using the hierarchical (blockwise entry) method of regression. As shown in Table 4.16, the eight variables explained 30.5% of the variance on the degree of Web 2.0 adoption. The size of the organization was entered first (in model 1), and all other variables were entered in model 2. The *F*-value (16.196, $p<0.00$) demonstrates that the results of the regression model are statistically significant.

Table 4.16 **Summary of Model**

Model	*R*	R^2	Adjusted R^2	SE	R^2 Change	*F* Change	Sig. *F* Change	Durbin-Watson
1	0.444	0.197	0.197	2.55	0.197	73.745	0.00	
2	0.552	0.305	0.286	2.40	0.108	6.500	0.00	1.939

4.3.2.1 Checking Assumptions

Before discussing the results of the multiple regressions for social capital and actual use in Table 4.17, this section checks several important assumptions for multiple regressions: normal distribution of errors, independent errors, no perfect multicollinearity, linearity, and homoscedasticity. Even though there are some violations in these assumptions, a good model can be drawn. However, if the assumptions are violated then the ability to generalize the regression results is damaged (Field, 2009; Keith, 2005).

Normal distribution of errors refers to the fact that residuals in the model are normally distributed. That is, if the values of residuals are plotted, they will approximate a normal curve. Figure 4.6 shows the distribution of residuals and the histogram suggests that the residuals from this regression approximate a normal distribution. The normality is also supported by the probability plot in Figure 4.7, where the residuals conform very well to the superimposed

straightline. As mentioned above, further tests for the no multicollinearity assumption were conducted by the variance inflation factor (VIF) and tolerance statistics which are "an index of the amount that the variance of each regression coefficient is increased over that with uncorrelated independent variables" (Cohen, Cohen, West, & Aiken, 2002, p. 423). In other words, "it is the percentage of the variance in a given predictor that cannot be explained by the other predictors" (Lim, 2008, p. 242). A common rule of thumb for a large value of VIF is 10, but with a higher standard, a VIF of 6 or 7 are considered as more reasonable indicators for excessive multicollinearity (Keith, 2005). Thus, the study set a VIF of 6 as a standard cutline. Tolerance below 0.2 indicates a potential problem, and below 0.1 indicates a serious problem.

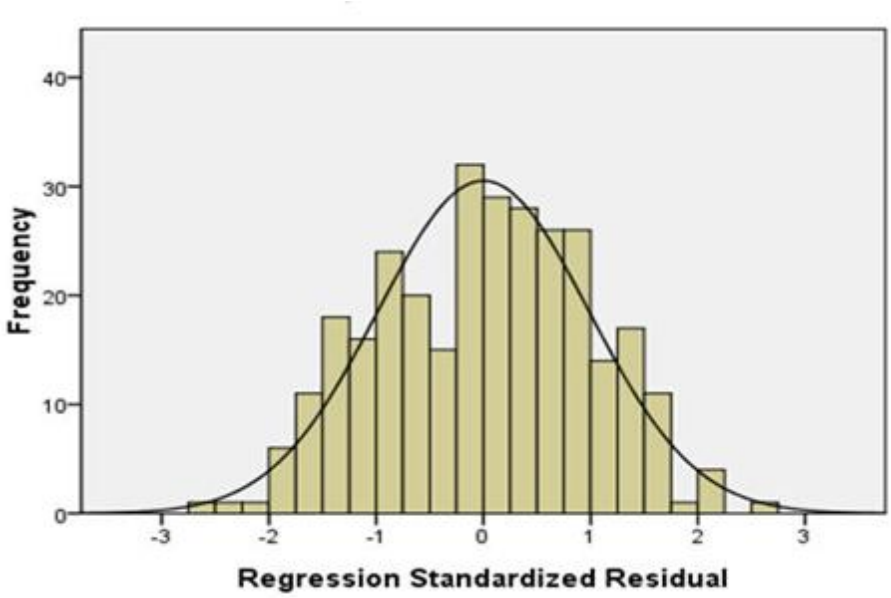

Figure 4.6 **Histogram of Residuals**

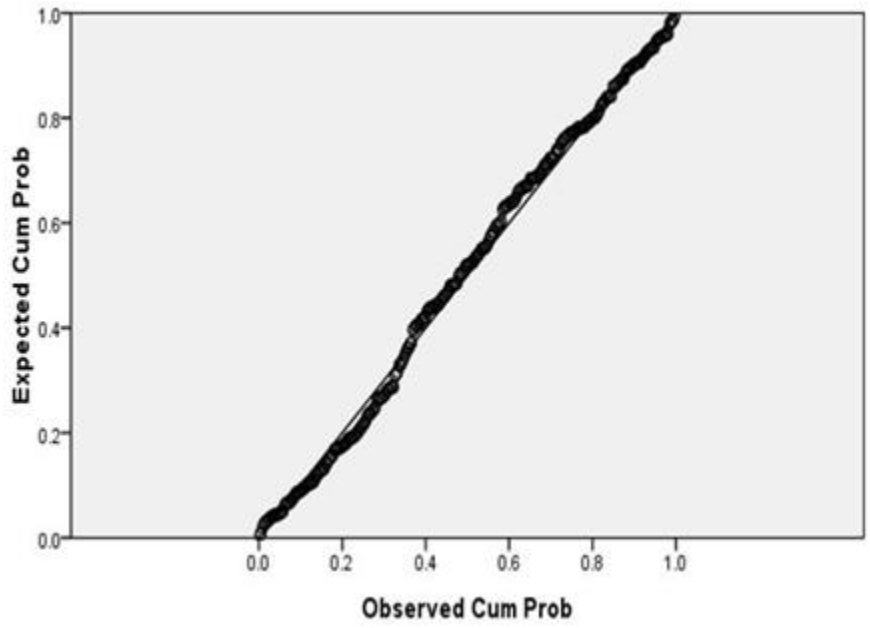

Figure 4.7 **P-P Plots of Residuals**

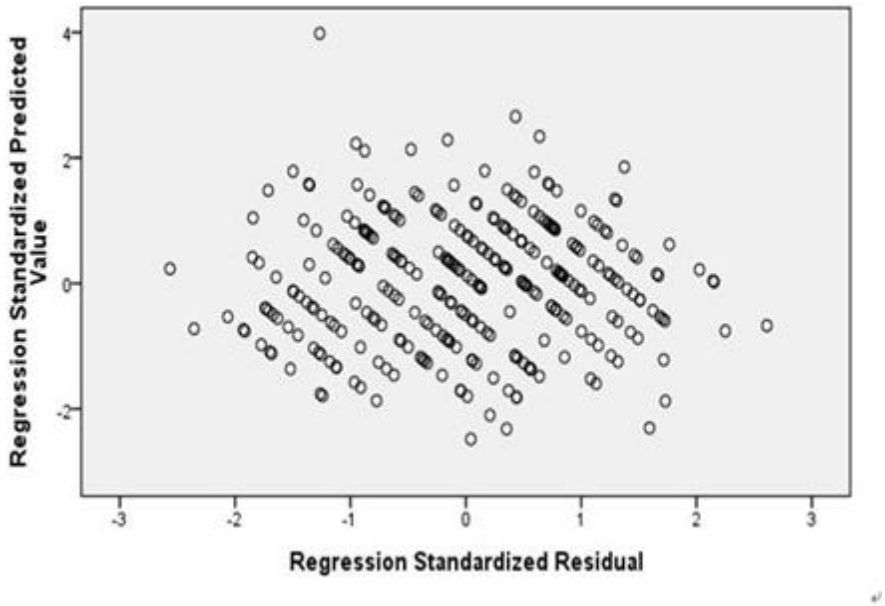

Figure 4.8 **Scatter plot of Residuals**

VIF and tolerance statistics are presented in Table 4.17. It may be concluded that the assumption of no multicollinearity has not been violated in that all values of the VIF are below 5. Although bonding and bridging ties are close to 0.20, the values are still above 0.20 and tolerance statistics for other variables are generally much higher than 0.20. Therefore, it may be

concluded that the assumption of no multicollinearity has not been violated.

The assumption of independent errors refers to the fact that residuals from regression are non-independent. The assumption was assessed by a Durbin-Watson test that examines serial correlations between errors and ranges between 0 and 4. Conventionally, values less than 1 or greater than 3 are considered signs of concern (Field, 2009). The Durbin-Watson statistic for the data in Table 4.16 is 1.939, indicating that the residuals in the model are independent. For homoscedasticity, meaning that the errors at each different level of the independent variables have the same variance, the scatter plot of residuals was used to assess homoscedasticity shown in Figure 4.8. A random array of dots (residuals) dispersed evenly around zero means no heteroscedasticity in the data. The graph in Figure 4.8 suggests that the data well-represent the homoscedasticity of variance of errors.

In sum, it seems that the data in the regression model has not violated several important assumptions for regression. Therefore, it may be concluded that the results of multiple regressions are fairly generalizable.

4.3.2.2 Hypotheses Test

This section primarily presents the results of hypotheses tests based on the conceptual frameworks (see Table 3.1 in chapter three). A total of eleven hypotheses were proposed in order to test the direct impacts of social capital on CVBs' technology adoption. As expected, the size of the organization showed significant influence on technology adoption ($\beta = 0.349$, $p < 0.00$). Controlling for the size of organization, the results of the hypotheses tests in Table 4.17 are discussed below.

Note that in this study competency trust was divided into the trust in bonding ties and in bridging ties and both trusts were entered in the regression model. However, it turned out that

two variables violated the assumption of no multicollinearity, as a VIF of 6.32 for the trust in bonding ties and 6.35 for trust in bridging ties were found, which are above the cutline set for this study. Moreover, the value of tolerance was 0.16 for both variables, which is below 0.2. Thus, it may be concluded that these two variables actually account for a similar variance in the outcome (actual level of Web 2.0 adoption). Moreover, no mean difference between the trust in bonding ties (M=6.29) and the trust in bridging ties (M=6.32) was found (Mean difference=0.03, Sig.> 0.34). A common way to avoid the multicollinearity problem is to combine the overlapping variables as a composite (Keith, 2005). Therefore, this study used a pooled mean value of trust from each tie in multiple regression models.

Table 4.17 **Multiple Regression for Social Capital and Actual Use**

Model	Independent Variables	Coefficients			t	Sig.	Collinearity Statistics	
		B	SE	β			Tolerance	VIF
1	**(Constant)**	-5.140	1.397	-	-3.679	0.00	-	-
	Organization Size	2.073	0.241	0.444	8.587	0.00	1.000	1.000
2	**(Constant)**	-6.431	1.482	-	-4.340	0.00	-	-
	Organization Size	1.629	0.242	0.349	6.724	0.00	0.879	1.137
	Network Size	1.330	0.376	0.177	3.540	0.00	0.947	1.056
	Tie Strength	-0.220	0.159	-0.074	-1.386	0.17	0.833	1.201
	Bonding Degree	1.087	0.513	0.210	2.117	0.04	0.240	4.165
	Bridging Degree	0.905	0.461	0.184	1.965	0.05	0.270	3.702
	Competency Trust	-0.009	0.106	-0.004	-0.081	0.94	0.932	1.073
	Associational Activity	0.103	0.030	0.175	3.482	0.00	0.943	1.060
	Subjective Norms	0.366	0.130	0.142	2.814	0.01	0.929	1.076

*R^2=0.305; F=16.196, p<0.00
*Dependent Variable: the number of actual Web 2.0 adoption

H1: Relationships between network size and technology adoption.

Research hypothesis 1 proposed that the larger networks of managers would be positively associated with the level of Web 2.0 technology adoption. As shown in Table 4.18, network size did show a statistically significant influence on the level of technology adoption (β = 0.177, $p < 0.00$). Thus, hypothesis 1 was supported. This result is largely consistent with the findings of previous studies related to technology adoption. That is, this study may support the idea that managers' larger network size plays an important role in increasing their chance to build more helpful social networks that they then use to gain technology information.

H2: Relationship between tie strength and technology adoption.

Research hypothesis 2 proposed that directors' weaker ties are positively associated with the level of technology adoption. However, the hypothesis was not supported (β = -0.017, p =0.17) even though the correlation between the two was significant (r=-0.11, p<0.05). In addition, the direction of the coefficient (β) was negative. That is, even though the mean value of tie strength (3.89 out of 5) suggests that directors' ties were rather weak, it seems that the weaker ties did not influence the level of technology adoption. This result also indicates that not only weaker ties, but also stronger ties, were not significant in technology adoption. In the literature review section, this study emphasized that weaker ties may influence technology adoption because they are helpful in providing relatively new information in comparison to stronger ties. Thus, weaker ties may have had a direct effect on directors' perceptions about using Web 2.0 technology rather than an indirect effect on technology adoption. Therefore, this result about tie strength is addressed again with the results of hypotheses tests related to social capital and perceptions about Web 2.0 adoption in the next section.

H3*: *Relationship between tie externality and technology adoption.

Research hypotheses 3a, 3b, and 3c proposed the relationships between bonding and bridging ties and Web 2.0 adoption. The hypotheses first posited that higher levels of both bonding and bridging ties may be positively associated with technology adoption. Both ties did show statistically significant influence on technology adoption ($\beta = 0.210$, $p < 0.00$ for bonding ties, and $\beta = 0.184$, $p < 0.00$ for bridging ties); that is, hypotheses 3b and 3c were supported. The results suggest that the each tie has their own advantages for facilitating an organization's technology adoption. That is, for bonding ties, one of the advantages frequently indicated by previous studies is that technology adoption is effectively facilitated by the adoption of peers who share similar interests and characteristics (Isham, 2002). In this study, the person working at another CVB is considered a bonding tie. Therefore, information derived from persons having the same job and their use of Web 2.0 might directly affect technology adoption by reducing the risk and uncertainty contained in new technologies. However, more influential bonding ties may be persons working at the same organization. The frequency table of ties in Table 4.8 did show that a higher percent of directors' bonding ties was with people in the same organization rather than in other CVBs. The importance of internal ties can be supported by the findings of the study by Magni and Pennarola (2008). Their findings revealed that in an organizational context, when people need to learn the functions of newly introduced technology, they usually find information within the group that they belong to. In addition, Rogers (1995) indicated that interpersonal channels are more effective in persuading an individual to accept a new idea especially if the channel links individuals who have a lot in common. Thus, it seems that easy accessibility to, and effective information sharing among bonding ties, contributes to the strong effect of bonding ties on CVBs' Web 2.0 adoption.

It appeared that the bridging tie also exerted its own advantage for facilitating technology adoption. The literature section identified that an important advantage of the bridging tie lies in its ability to expose people to new ideas and the existence of new technologies. Given that in general, not-for-profit organizations like CVBs lag behind in adopting new technologies, it seems that the higher involvement of directors in bridging ties with people having different jobs or working in different industries might provide more chances for witnessing the use and benefits of new Web 2.0 technology in different business contexts.

However, the hypothesis 3a that proposed that bridging ties may have a more positive influence on technology adoption than a bonding tie was rejected. The standard coefficient (β value) for bonding and bridging ties showed bonding ties have a stronger impact on the level of technology adoption than bridging ties. This result may be attributed to the current level of CVBs' Web 2.0 adoption. Based on literature related to DMOs' technology use, this study expected that the adoption rate of CVBs' Web 2.0 would be relatively low, and thus higher dependency on bonding ties may not be able to provide much information about Web 2.0 technology. However, the data showed that the amount of Web 2.0 adoption seems to not be very low. As explained before, the current status of CVBs' Web 2.0 adoption would be somewhere at the early stage, and it seems that their number of Web 2.0 adoption has increased significantly in the period while this study was designed. Therefore, it may be argued that there has been considerable information exchange about the existence of Web 2.0 technologies among CVB employees.

H4*: *Relationship between competency trust and technology adoption.

The research hypothesis 4a proposed that competency trust in directors' social networks may influence technology adoption. However, as Table 4.17 shows, the hypothesis was not supported (β =-0.081, p =0.94). Aside from the solo effect of competency trust, this study also hypothesized the synergy effect of trust with different types of social networks; that is, it was proposed that each tie (weaker, bonding, and bridging tie) with strong trust may be positively associated with the level of Web 2.0 adoption. To test the hypotheses, the interaction effect of each tie and trust was tested in multiple regressions by creating cross-product variables. Cross-product terms were created by multiplying two variables. Before multiplying the variables, the values of each tie and trust were mean-centered to avoid the multicollinearity problem, which does not change the standard deviations of the variables (Cohen et al, 2003; Keith, 2005). For an interaction test, the first step is to test whether or not the inclusion of interaction terms in the model is statistically significant. If the inclusion of interaction terms is not significant, it is suggested that the terms not be included in the final model even though the inclusion increases the explanation power (R^2) (Cohen et al, 2003; Keith, 2005). Therefore, other social capital variables were first regressed on the actual use of Web 2.0 and then each interaction term was added in the model. Table 4.18 shows the R^2 change when interactive terms were added. None of the interactive terms led to a statistically significant increase in R^2 (ΔR^2=0.00, p=0.80 for tie strength and trust, ΔR^2=0.01, p=0.62 for bonding tie and trust, and ΔR^2=0.03, p=0.19 for tie strength and trust). This means that the interactions were not statistically significant. Therefore, the hypotheses related to interaction were rejected, and the interaction terms were not included in the final model for research question 2.

Table 4.18 **Test of the Interaction between Trust and Ties**

Model	R	R^2	Adjusted R^2	SE	R^2 Change	F Change	df1	df2	Sig. F Change
1	0.552	0.305	0.286	2.40	0.108	16.008	8	293	0.00
2	0.553	0.305	0.284	2.40	0.000	0.066	1	292	0.80
3	0.553	0.306	0.284	2.40	0.001	0.249	1	292	0.62
4	0.556	0.309	0.288	2.39	0.003	1.747	1	292	0.19

*Model 1=without interaction term added
*Model 2 =only tie strength*trust term added to model 1
*Model 3=only bonding tie*trust term added to model 1
*Model 4=only bridging*trust term added to model 1

Although directors had, in general, strong trust in their ties' technology-related competency, the results show that the trust did not have a direct effect on technology adoption. One possible explanation may be found in the unique roles of trust in relation to technology adoption. In fact, as reviewed, the primary emphasis of trust on an individual's or organization's technology adoption has been on its ability to make people more likely to absorb new technology-related ideas and recommendations suggested by a trusted person, which then increases technology adoption (Dakhli & De Clercqu, 2004; Levin & Cross, 2004). Thus, if the direct effect of trust has not been found, it is a plausible expectation that the trust may indirectly affect the decision to adopt Web 2.0. In other words, like tie strength, trust may be more important in influencing directors' perceptions about Web 2.0 adoption by helping directors' evaluation of new Web 2.0 technologies.

H5*: *Relationship between associational activity and technology adoption.

Adopting the *Information Ground Theory,* hypothesis 5 proposed that the higher level of directors' associational activity may significantly influence technology adoption. The hypothesis was supported (β =0.175, p <0.00). As expected, it seems that associational activity provided directors with opportunities to build new relationships from diverse backgrounds and thus helped

them gain information about Web 2.0 technology. The significant influence of not only network size, but associational activity, may strongly support the importance of social networks in technology adoption. In other words, irrespective of the type of networks, directors' involved in diverse networks may substantially influence the level of Web 2.0 adoption for their organization.

H6*: *Relationship between subjective norms and technology adoption.

Hypothesis 6 proposed that directors' higher awareness of subjective norms may positively influence the level of their CVB's Web 2.0 technology adoption. Consistent with the expectation, the hypothesis was supported (β =0.142, p <0.05). Its magnitude of effect on the level of Web 2.0 adoption should not be considered as small, but among significant variables it had the smallest effect on technology adoption. However, in technology adoption-related studies, subjective norms have often been considered as a significant factor for individuals' perceptions about, and attitudes toward, using technology (Davis et al, 1989; Lu, Yao, & Yu, 2005; Taylor & Todd, 2001). Therefore, it is expected that subjective norms may show stronger indirect effects on technology adoption by increasing individuals' perceptions and attitudes related to new technology.

4.3.3 Summary of Hypotheses Test for Research Question 2

In sum, most hypotheses proposed in research question 2 have been supported. The summary of the hypotheses test is presented in Table 4.19. Controlling for the size of the organization, the bonding tie showed the strongest magnitude of effects (β =0.210) on the level of Web 2.0 use, which may imply the importance of building strong internal relationships and communication. However, tie strength and competency trust did not show any significant results.

As mentioned, these two factors may need further analysis related to directors' perceptions about using Web 2.0. In the following section, research question 3 is addressed, which provides useful information about how social capital can facilitate the process of technology adoption, and hopefully provides a greater understanding about the role of tie strength and trust on technology adoption.

Table 4.19 **Summary of Hypotheses Test for Research Question 2**

Hypotheses			Results
Network size and Technology adoption	Bigger network size → actual level of Web 2.0 adoption.	H1	Accept
Tie strength and Technology adoption	Higher levels of weak ties → actual level of Web 2.0 adoption.	H2	Reject
Tie externality and Technology adoption	Higher levels of bridging ties have stronger influence on level of DMO's Web 2.0 technology adoption than bonding ties.	H3a	Reject
	Higher levels of bonding ties → actual level of Web 2.0 adoption.	H3b	Accept
	Higher levels of bridging ties → actual level of Web 2.0 adoption.	H3c	Accept
Trust and Technology adoption	Higher levels of competency trust → actual level of Web 2.0 adoption.	H4a	Reject
	Interaction effect of weaker ties and competency trust → actual level of Web 2.0 adoption.	H4b	Reject
	Interaction effect of bonding ties and competency trust → actual level of Web 2.0 adoption.	H4c	Reject
	Interaction effect of bridging ties and competency trust → actual level of Web 2.0 adoption.	H4d	Reject
Associational activity and Technology adoption	Higher levels of participation in associational activity → actual level of Web 2.0 adoption.	H5	Accept
Subjective norms and Technology adoption	Higher awareness of subjective norms → actual level of Web 2.0 adoption.	H6	Accept

4.4 Results of Research Question 3

RQ3: How does social capital affect a DMO's technology adoption process?

This section presents the indirect impact of social capital on Web 2.0 technology adoption (see research model in Figure 2.5). In detail, social capital has been integrated into the models that explain technology-adoption processes, and it is hypothesized that the social capital of directors may have significant effects on their perceptions about Web 2.0 use for destination marketing, which then influences the level of Web 2.0 use for their organization. In the following, the hypotheses related to technology adoption process are tested.

4.4.1 Reliability and Construct Validity

Prior to performing the hypotheses test, the reliability and construct validity for perception-related multi-items scales were tested: perceived usefulness (PU), perceived ease of use (PEU), attitude toward using Web 2.0 technology (AT), and intention to use Web 2.0 (I). Although the reliability and validity for trust and subjective norms were tested and the results shown in the previous section, they were tested again together with other perception-related variables. The same procedures and tests that were used in the previous section were employed. For the reliability test, Table 4.20 presents the Cronbach's alpha and the results of the principal component factor analysis which was conducted on the 21 items with the Varimax rotation method. The KMO measure (0.76) verified the sampling adequacy for further analysis, which is above the recommended limit of 0.5. Bartlett's test of sphericity ($\chi 2=5410.45$, $p<0.00$) indicated that correlations between items were sufficiently large for principal factor analysis. As expected, six components were extracted which have eigenvalues over Kaiser's criterion of 1. All values of factor loadings were well above the acceptable limit of 0.70. The six components explained

84.69% of total variance (note: for more detailed descriptions of the variables, please see the methods section, p.106-109).

For Cronbach's alpha, as shown in Table 4.20, all constructs had high reliabilities. Except for the intention to use and the competency trust, all values of Cronbach's alpha were above 0.90 which is well above the minimum reliability of 0.70. Construct validity was also tested with an inter-item correlation matrix. As shown in Table 4.21, all the reflective constructs are more strongly related to their one measures that to other constructs, which verified the convergent and discriminant validation of the scales. Overall, it may be concluded that each instrument for measuring the respondents' perceptions are robust measures.

Table 4.20 **Factor Loading and Reliability**

Factors	Loadings	Eigenvalues	% of variance	Cronbach's α
Perceived Ease of Use (PEU)		3.56	16.97	0.95
PEU4	0.946			
PEU3	0.919			
PEU1	0.915			
PEU2	0.889			
Perceived Usefulness (PU)		3.47	16.53	0.94
PU3	0.916			
PU4	0.909			
PU1	0.890			
PU2	0.805			
Attitude (AT)		3.30	15.69	0.92
AT2	0.872			
AT3	0.872			
AT4	0.868			
AT1	0.799			
Competency Trust (CT)		2.90	13.81	0.88
CT3	0.974			
CT1	0.969			
CT2	0.965			
Intention (I)		2.28	10.85	0.78
I1	0.843			
I2	0.839			
I3	0.756			
Subjective Norms (SN)		2.28	10.84	0.97
SN2	0.849			
SN3	0.796			
SN1	0.761			

KMO=0.76, $\chi 2$=5410.45, p<0.00, % of total Variance: 84.69

Table 4.21 **Inter-item correlation matrix**

	PU1	PU2	PU3	PU4	PE1	PE2	PE3	PE4	SN1	SN2	SN3	AT1	AT2	AT3	AT4	I1	I2	I3	TR1	TR2	TR3
PU1	1.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PU2	0.75	1.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PU3	0.84	0.73	1.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PU4	0.84	0.74	0.90	1.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PE1	0.21	0.27	0.23	0.28	1.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PE2	0.31	0.32	0.32	0.35	0.86	1.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PE3	0.21	0.20	0.23	0.28	0.79	0.77	1.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PE4	0.25	0.23	0.26	0.29	0.83	0.84	0.92	1.00	-	-	-	-	-	-	-	-	-	-	-	-	-
SN1	0.42	0.38	0.37	0.38	0.21	0.29	0.25	0.25	1.00	-	-	-	-	-	-	-	-	-	-	-	-
SN2	0.36	0.39	0.33	0.35	0.23	0.28	0.22	0.24	0.69	1.00	-	-	-	-	-	-	-	-	-	-	-
SN3	0.43	0.42	0.43	0.42	0.27	0.35	0.33	0.34	0.66	0.74	1.00	-	-	-	-	-	-	-	-	-	-
AT1	0.24	0.26	0.14	0.24	0.24	0.28	0.26	0.23	0.44	0.40	0.38	1.00	-	-	-	-	-	-	-	-	-
AT2	0.27	0.28	0.18	0.24	0.19	0.23	0.19	0.16	0.42	0.37	0.41	0.73	1.00	-	-	-	-	-	-	-	-
AT3	0.26	0.26	0.20	0.26	0.14	0.18	0.15	0.12	0.43	0.36	0.35	0.73	0.80	1.00	-	-	-	-	-	-	-
AT4	0.20	0.20	0.10	0.16	0.14	0.16	0.11	0.12	0.39	0.32	0.30	0.68	0.76	0.73	1.00	-	-	-	-	-	-
I1	0.32	0.32	0.29	0.29	0.10	0.16	0.12	0.14	0.39	0.35	0.37	0.42	0.38	0.43	0.37	1.00	-	-	-	-	-
I2	0.31	0.34	0.30	0.31	0.18	0.20	0.15	0.18	0.41	0.37	0.40	0.46	0.44	0.45	0.39	0.86	1.00	-	-	-	-
I3	0.21	0.31	0.12	0.18	0.09	0.12	0.04	0.06	0.22	0.29	0.26	0.35	0.33	0.27	0.29	0.51	0.53	1.00	-	-	-
TR1	0.21	0.21	0.23	0.20	0.02	0.04	0.05	0.07	0.18	0.18	0.14	0.02	0.03	0.08	0.10	0.01	0.01	0.04	1.00	-	-
TR2	0.21	0.18	0.22	0.17	0.01	0.04	0.04	0.08	0.19	0.18	0.15	0.04	0.05	0.09	0.12	0.04	0.03	0.06	0.92	1.00	-
TR3	0.22	0.20	0.25	0.20	0.01	0.04	0.04	0.08	0.20	0.20	0.15	0.05	0.07	0.13	0.14	0.05	0.04	0.04	0.96	0.94	1.00

Table 4.22 **Correlation**

	AU	Age	OS	NS	TS	BD	BR	CT	AA	SN	PU	PEU	AT	I
Actual Use (AU)	1.00	-	-	-	-	-	-	-	-	-	-	-	-	-
Age	0.10	1.00	-	-	-	-	-	-	-	-	-	-	-	-
(ln)Organization Size (OS)	0.44**	0.07	1.00	-	-	-	-	-	-	-	-	-	-	-
(ln)Network Size (NS)	0.25**	-0.10	0.14*	1.00	-	-	-	-	-	-	-	-	-	-
Tie Strength (TS)	-0.11*	-0.11	-0.04	0.05	1.00	-	-	-	-	-	-	-	-	-
Bonding Tie (BT)	0.17**	0.15**	0.23**	-0.01	-0.34**	1.00	-	-	-	-	-	-	-	-
Bridging Tie (BRT)	-0.07	-0.10	-0.15**	-0.05	0.17**	-0.84**	1.00	-	-	-	-	-	-	-
Competency Trust (CT)	0.02	0.05	0.04	0.01	-0.04	-0.05	0.10	1.00	-	-	-	-	-	-
Associational Activity (AA)	0.25**	0.01	0.14*	0.13*	-0.00	-0.01	0.03	-0.14*	1.00	-	-	-	-	-
Subjective Norms (SN)	0.22**	-0.04	0.17**	0.12*	0.03	0.05	-0.04	0.17**	0.00	1.00	-	-	-	-
Perceived Usefulness (PU)	0.12*	-0.11	0.05	0.08	-0.05	0.07	-0.10	0.27**	-0.09	0.50**	1.00	-	-	-
Perceived Ease of Use (PEU)	0.21**	-0.31**	0.06	0.07	-0.02	-0.04	0.05	0.10	0.09	0.31**	0.32**	1.00	-	-
Attitude (AT)	0.27**	-0.03	0.15**	0.13*	-0.05	-0.01	0.03	0.08	0.07	0.44**	0.23**	0.19**	1.00	-
Intention (I)	0.21**	-0.06	0.16**	0.25**	0.01	0.00	-0.02	0.01	0.03	0.34**	0.30**	0.12*	0.46**	1.00
Mean	6.78	47.26	5.76	0.74	3.89	0.52	1.12	6.29	5.92	6.16	6.25	5.21	6.35	5.96
Std. Deviation	2.84	10.72	0.61	0.38	0.95	0.55	0.58	1.35	4.80	1.10	1.17	1.45	0.63	0.91
N	303	295	303	303	303	303	303	303	303	302	302	302	302	302

*=p<0.05, **=p<0.01

4.4.2 Multiple Regression for Social Capital and Technology Adoption Process

A considerable amount of research has shown that older workers in organizations have a more difficult time adapting to changes in rapidly evolving new technologies and are likely to need more time to evaluate them in comparison to younger workers (Morris & Venkatesh, 2006). Roger (1995) indicated that early adopters in innovation diffusion are typically young in age. In particular, Morris and Venkatesh found in the study of an individual's technology adoption that according to age, workers in organizations showed different degrees of perceptions on attitudes toward using a new technology and subjective norms, which in turn affected behavioral intention to use technology. That is, younger workers showed higher perceived usefulness and ease of use than older workers. In addition, there is no doubt that younger people are more likely to use Web 2.0 technology for their own purposes than older people. Thus, it is a plausible expectation that age difference may affect the perceptions related to technology adoption. In this sense, this study also included the directors' ages in the multiple regression models as another control variable along with the size of the organization.

Table 4.22 presents the summary of correlations between social capital and perception-related variables. Consistent with the expectation, increased age was negatively correlated with perceived ease of use. That is, as one's age was older, directors perceived Web 2.0 as difficult to use. As shown in the table, among social capital-related variables, different types of social networks (bonding, bridging, and weaker ties) did not show significant relationships with perception-related variables, while subjective norms significantly correlated with all other perception variables (PEU, PU, AT, and I). In addition, the subjective norm was correlated with other social capital-related variables except for competency trust. This study proposed that social capital-related variables may increase the awareness of subjective norms, but their poor

correlations with subjective norms may somewhat suggest that other social capital-related variables are not significant predictors for subjective norms. However, at the same time, given that the subjective norms have significant relationships with other perception-related variables, it may also be possible that the subjective norms are an important component of social capital. They may play a role in influencing directors' perceptions about using Web 2.0, rather than being a factor that is influenced by other social capital-related variables. However, because the correlations only provide a little information about causal relationships among variables, this issue is re-discussed with the results of regressions that test these hypotheses.

In terms of multicorrelinearty, except for the correlation between bonding and bridging ties that was already examined, there seem to be no pairs that show excessive correlation. The assumption of multicorrelinearity was also checked with VIF and tolerance statistics and are presented along with the results of multiple regression analysis.

4.4.2.1 Hypotheses Test

This section now moves to the test of hypotheses for the relationships between social capital and technology adoption processes. Based on the conceptual model for this study, a series of hypotheses were proposed (see Table 3.2) and the results of the hypotheses tests are presented as follows.

Relationships between social capital and perceived usefulness.

First, the relationships between social capital and perceived usefulness were tested by multiple regression analysis. For the primary dependent variable, perceived usefulness, the variables for age and organization size were both entered in the first block. In the second block,

the social capital-related variables were added. In addition, as the interaction effects of trust with different types of social networks were also proposed, the R^2 change test was also conducted to decide the addition of interaction terms to the final model. The results of R^2 change are presented in Table 4.23. The way and procedures of creating the interaction terms were the same as those used in the section on research question 2. Among three interaction terms, the R^2 change was significant only when the interaction term of tie strength and competency trust was added (ΔR^2=0.018, p<0.05), which implies that no interaction effects existed among bonding and bridging ties. Therefore, only one interaction term (tie strength×competency trust) was added in the regression model for perceived usefulness.

Table 4.23 **Interaction Test**

Model	*R*	R^2	Adjusted R^2	SE	R^2 Change	*F* Change	df1	df2	Sig. F Change
1	0.352	0.124	0.099	1.120	0.107	5.825	6	284	0.00
2	0.377	0.142	0.115	1.110	0.018	6.077	1	284	0.01
3	0.370	0.137	0.109	1.114	0.013	4.304	1	284	0.09
4	0.360	0.130	0.102	1.118	0.006	1.944	1	284	0.16

*Model 1=without interaction term added
*Model 2 =only tie strength*trust term added to model 1
*Model 3=only bonding tie*trust term added to model 1
*Model 4=only bridging*trust term added to model 1

Table 4.24 and 4.25 show the results of the regression analysis. The ANOVA test reported significant *F*-ratio (5.227, p<0.00), shown in Table 4.24, that implies the model is statistically significant. The Durbin-Watson statistic (2.020), which is above 1 and below 3, also indicates that the residuals in the model are independent. Multicollinearity was also tested and no evidence of it was found, as the VIF's for the predictors were all less than 5, which are well below the standard cutoff of 10 (see Table 4.25).

Table 4.24 **Model Summary for Perceived Usefulness**

Model	R	R^2	Adjusted R^2	SE	R^2 Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	0.128	0.016	0.010	1.175	0.016	2.410	2	291	0.092	-
2	0.352	0.124	0.099	1.120	0.107	5.825	6	285	0.000	-
3	0.377	0.142	0.115	1.110	0.018	6.077	1	284	0.014	2.020

Table 4.25 **Summary of Regression Results for Perceived Usefulness**

Model	Independent Variables	Coefficients			t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	**(Constant)**	6.161	0.704	-	8.749	0.00	-	-
	Age	-0.013	0.006	-0.117	-1.998	0.05	0.994	1.006
	Organization Size	0.120	0.114	0.062	1.056	0.29	0.994	1.006
2	**(Constant)**	6.416	0.708	-	9.065	0.00	-	-
	Age	-0.015	0.006	-0.138	-2.429	0.02	0.959	1.043
	Organization Size	0.086	0.115	0.044	0.752	0.45	0.888	1.127
	Network Size	0.171	0.178	0.055	0.963	0.34	0.950	1.053
	Tie Strength	-0.062	0.075	-0.050	-0.826	0.41	0.831	1.203
	Bonding Degree	-0.206	0.244	-0.096	-0.846	0.40	0.239	4.186
	Bridging Degree	-0.432	0.217	-0.211	-1.985	0.05	0.271	3.692
	Competency Trust	0.249	0.049	0.288	5.072	0.00	0.956	1.046
	Associational Activity	-0.013	0.014	-0.052	-0.911	0.36	0.934	1.071
3	**(Constant)**	6.368	0.702	-	9.072	0.00	-	-
	Age	-0.015	0.006	-0.133	-2.368	0.02	0.957	1.044
	Organization Size	0.093	0.114	0.047	0.813	0.42	0.887	1.127
	Network Size	0.162	0.176	0.052	0.921	0.36	0.949	1.054
	Tie Strength	-0.061	0.074	-0.050	-0.827	0.41	0.831	1.203
	Bonding Degree	-0.259	0.242	-0.120	-1.067	0.29	0.237	4.218
	Bridging Degree	-0.466	0.216	-0.228	-2.158	0.03	0.270	3.708
	Competency Trust	0.223	0.050	0.259	4.500	0.00	0.915	1.092
	Associational Activity	-0.013	0.014	-0.052	-0.907	0.37	0.933	1.071
	Interaction (Tie Strength*Trust)	0.11	0.045	0.139	2.465	0.01	0.946	1.057

*R^2=0.142; F=5.227, p<0.00
*Dependent Variable: Perceived Usefulness

As shown in Table 4.24, with two control variables (size of organization and age of the director), a total of nine social capital variables were regressed. They explained, in combination, 14.2 % (R^2=0.142**)** of variance on perceived usefulness, which may be considered relatively low. For control variables, age significantly affected perceived usefulness while the size of the organization did not influence perceived usefulness. That is, consistent with the expectation, as age increases, the degree of perceived usefulness decreases.

The regression analysis provides interesting findings. Most variables that significantly and directly affected the level of Web 2.0 adoption did not significantly influence perceived usefulness. In particular, the bonding ties that had a relatively large effect on technology adoption did not significantly influence perceived usefulness. (β =-0.120, p=0.29). It seems that the use of Web 2.0 and that information about the technologies shared by people in the same or a similar job directly led directors to implement the technology as opposed to helping them evaluate the Web 2.0 technologies.

However, the competency trust, which did not have a significant relationship to the actual use, did show significant influence on perceived use (β =0.259, p<0.001). This may confirm that competency trust plays a role in facilitating information sharing among networked people and influencing the formation of CVB directors' perceptions about Web 2.0, rather than directly increasing Web 2.0 adoption. That is, as Levin and Cross (2004) indicated, a director's strong trust in their tie may enable them be more willing to listen and absorb information from their ties.

Another important role of trust was found in its synergy effect with tie strength. As shown in the results, tie strength alone did not show significant influence on perceived usefulness, but the study found that tie strength has a different effect on perceived usefulness

according to a different level of competency trust (β =0.139, p <0.05). For a better understanding, an interaction graph was created (Figure 4). For the interaction graph, three different values of trust (+2 standard deviations, mean, and -2 standard deviations) were used and Figure 4.9 shows the separate regression lines for each of the three values of trust. It indeed appears that the weaker tie had a positive effect on the perceived usefulness when the degree of trust was stronger, but that it had little effect, or a negative effect, on the perceived usefulness as the degree of trust decreased. Thus, it may be concluded that weaker ties were significant in increasing positive perceived usefulness on the condition that directors had stronger competency trust in their ties.

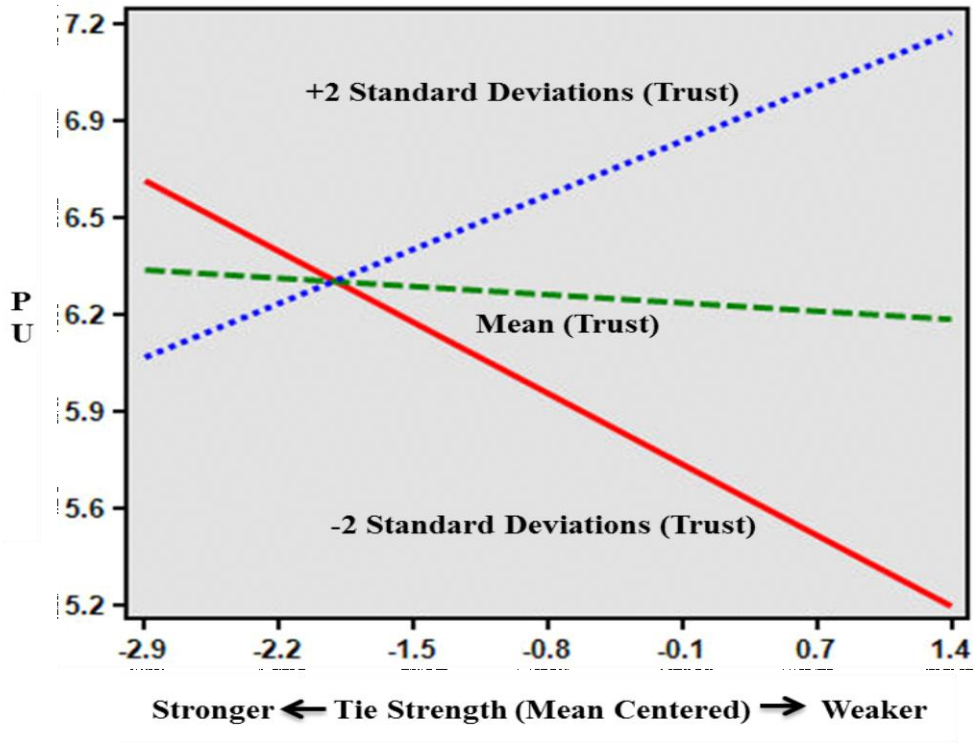

Figure 4.9 **Interaction Graph for Tie Strength and Trust**

The bridging ties also provided an interesting result. The bridging ties showed significant influence on the perceived usefulness, but the effect was negative (β =-0.228, p <0.05). That is, it seems that as directors' dependency on bridging ties increased, the perceived usefulness decreased. The result was opposite to what the study expected and needs further

investigation. Based on the method that this study used to measure the degree of bonding and bridging ties, there are two ways in which directors can decrease the degree of bridging ties. The first way is to increase the degree of bonding ties, which lowers the degree of bridging ties. Another way is to increase relationships with people working in the tourism industry by decreasing the number of relationships with people working in different industries, which lowers the degree of bridging ties but does not affect the degree of bonding ties. Although bonding ties did not show a significant effect on the perceived usefulness, the coefficient of bonding ties was also negative (β =-0.120, p =0.29). This may give the idea that simply increasing the degree of bonding ties is also not helpful for a higher degree of perceived usefulness.

For this reason, it may be argued that there is a quadric or cubic relationship with bridging ties and perceived usefulness; that is, as the degree of bridging ties increases, the perceived usefulness may increase but at certain point the perceived usefulness may decrease. "Linearity is one of the basic assumptions of regression, but it is also possible for a regression line to have curves in it" (Keith, 2005, p.170). Therefore, further analysis to test the curvilinear effect of bridging ties on perceived usefulness was conducted by using curve estimation. Table 4.26 presents the comparisons of the linear model with the quadratic and cubic model. The F-test of the overall model significance shows that the quadratic and cubic model are significant (F=2.877, p<0.05 for the quadratic model and F=2.884, p<0.05 for the cubic model), but the linear model was not significant. For a better understanding about the cubic relationship, the graph of cubic trend was created. As shown in Figure 4.10, the mean of perceived usefulness first goes up as the degree of bridging ties increases, then the mean goes down, but then the mean slightly rises again as the bridging tie reaches the maximum value. However, the increase of the mean in the last point is minimal, and the trend seems to be very close to the quadratic

relationship. The cubic and quadratic trend suggests that directors' strong dependency may cause a negative impact on perceived usefulness and the moderate degree of bridging ties may be helpful for increasing perceived usefulness.

The result may be because strong reliance on bridging ties means a lack of direct information related to destination marketing. Even though Web 2.0 has been widely used by other industries with similar purposes, information or examples of Web 2.0 use gained from a different industry may not be directly related to the director's organization or destination marketing. Therefore, the degree to which directors perceive the usefulness of Web 2.0 technology, and who depend strongly on bridging ties, may be lower than those who are involved in more balanced social networks.

Table 4.26 **Results of Curve Estimation**

Model	Model Summary				
	***R* Square**	***F***	**df1**	**df2**	**Sig.**
Linear	0.011	3.292	1	300	0.07
Quadratic	0.019	2.877	2	299	0.05
Cubic	0.028	2.884	3	298	0.04

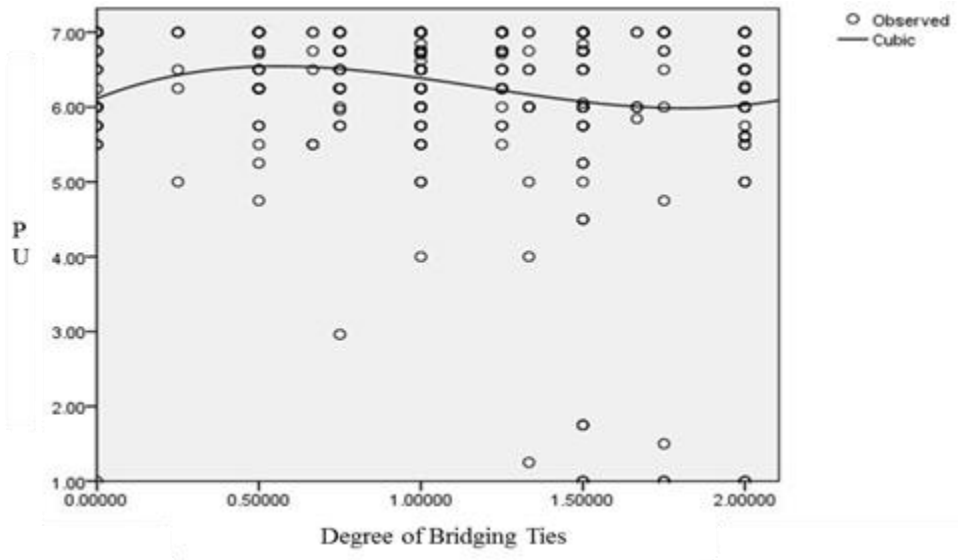

Figure 4.10 **Cubic Trend between Bridging Ties and Perceived Usefulness**

Relationships between social capital and perceived ease of use.

The relationships between social capital and perceived ease of use were tested. The same procedure used for perceived usefulness was also used in this test. For the interaction effect, Table 4.27 shows the result of R^2 change. However, none of the interaction terms were significant so no interactive terms are included in the final model.

Table 4.27 **Test of Interaction Effect for Perceived Ease of Use**

Model	*R*	R^2	Adjusted R^2	SE	R^2 Change	*F* Change	df1	df2	Sig. *F* Change
1	0.364	0.132	0.108	1.372	0.030	1.640	6	285	0.14
2	0.367	0.134	0.107	1.373	0.002	0.652	1	284	0.42
3	0.365	0.133	0.105	1.374	0.001	0.174	1	284	0.68
4	0.364	0.133	0.105	1.374	0.000	0.105	1	284	0.75

*Model 1=without interaction term added
*Model 2 =only tie strength*trust term added to model 1
*Model 3=only bonding tie*trust term added to model 1
*Model 4=only bridging*trust term added to model 1

Table 4.28 and 4.29 present the summary of the regression results. Including the organization size and the director's age as a control variable, a total of eight independent variables were regressed. As shown in Table 4.28, the eight variables explained 13.2% of the variance on the perceived ease of use, which is also not high. The *F*-value (5.435, $p<0.00$) in Table 4.29 demonstrates that the results of the regression model are statistically significant. The Durbin-Watson statistic (1.930) in Table 4.28 and the VIF and tolerance statistics in Table 4.28 also verify no violation of the assumptions of independent error and multicollinearity.

The regression result for perceived ease of use seems to confirm the direct impacts of different types of social networks on technology adoption rather than the indirect impacts. That is, the research hypotheses relevant to bonding and bridging ties and tie strength were all rejected. However, it appeared that competency trust was identified as having a distinct role related to

technology adoption. Along with the regression result for perceived usefulness discussed above, competency trust again showed a significant impact on perceived ease of use (β =0.128, p <0.05). As mentioned above, this result strongly supports the idea that trust is an important factor in facilitating information exchange and to some extent knowledge transfer.

Table 4.28 **Model Summary for Perceived Ease of Use**

Model	R	R^2	Adjusted R^2	SE	R^2 Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	0.320	0.102	0.096	1.381	0.102	16.601	2	291	0.00	
2	0.364	0.132	0.108	1.372	0.030	1.640	6	285	0.14	1.930

Table 4.29 **Summary of Regression Results for Perceived Ease of Use**

Model	Independent Variables	Coefficients			t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	**(Constant)**	6.21	0.828	-	7.498	-	-	-
	Age	-0.043	0.008	-0.317	-5.689	-	0.994	1.006
	Organization Size	0.179	0.134	0.075	1.341	0.18	0.994	1.006
2	**(Constant)**	6.443	0.867	-	7.431	-	-	-
	Age	-0.045	0.008	-0.329	-5.831	0.00	0.959	1.043
	Organization Size	0.105	0.141	0.044	0.748	0.46	0.888	1.127
	Network Size	0.098	0.218	0.026	0.453	0.65	0.950	1.053
	Tie Strength	-0.065	0.092	-0.043	-0.714	0.48	0.831	1.203
	Bonding Degree	0.155	0.298	0.059	0.519	0.60	0.239	4.186
	Bridging Degree	0.140	0.266	0.056	0.527	0.60	0.271	3.692
	Competency Trust	0.136	0.060	0.128	2.262	0.02	0.956	1.046
	Associational Activity	0.034	0.017	0.111	1.951	0.05	0.934	1.071

*R^2=0.132; F=5.435, p<0.00
*Dependent Variable: Perceived Ease of Use

There may be at least two reasons for the non-significant variables. The first may be because of the pronounced effect of the age variable. The regression result showed that the age had a large magnitude of effect (β =-0.329, p <0.00) on the perceived ease of use; that is, younger directors had a higher level of perceived ease of use than older ones. In other words, age itself explained substantial variance in the perceived ease of use. This may indicate that the perceived ease of use is more influenced by personal characteristics.

Another reason for several non-significant variables may be due to respondents' job positions. This study only surveyed directors of CVBs, and it is likely that they are not in charge of operating Web 2.0 technologies. In other words, although they are heavily involved in making the decision to adopt Web 2.0 for their organization, they do not necessarily have in-depth knowledge about implementing the technology. Anecdotally, there are still many organizations that hire full- or part-time employees or delegates for implementing Web 2.0 technology because the directors still find Web 2.0 technology difficult to use. In this sense, even though social capital can provide useful information about the way to use Web 2.0 technology, the less chance the directors have to personally test and use the technology for destination marketing may diminish the influence of social capital on perceived ease of use.

Similarly, this study tries to explain the significant effect of associational activity on perceived ease of use (β =0.111, p< 0.05). It is a common phenomenon that these days, many associational activities are arranged and operated by using social networking sites (e.g., Facebook or other online communication sites). Thus, directors' higher participation in diverse associational activities might have provided relatively higher opportunities for direct experience in using Web 2.0 technology to communicate with members, which in turn increased their perceived ease of use.

Relationships between social capital and subjective norms.

This section presents the results of regression analysis for subjective norms. Again the significant test of interaction effects was conducted, and Table 4.30 shows the results of the R^2 change. As only the interaction term of bridging ties×competency trust was statistically significant (ΔR^2=0.025, p<0.05), other interaction terms are excluded in the final model.

Table 4.30 **Test of Interaction Effect for Subjective Norms**

Model	*R*	R^2	Adjusted R^2	SE	R^2 Change	*F* Change	df1	df2	Sig. *F* Change
1	0.271	0.073	0.047	1.08881	0.043	2.198	6	285	0.04
2	0.271	0.074	0.044	1.09065	0.000	0.036	1	284	0.85
3	0.276	0.076	0.047	1.08905	0.003	0.873	1	284	0.35
4	0.314	0.098	0.070	1.07590	0.025	7.878	1	284	0.01

*Model 1=without interaction terms added
*Model 2 =only tie strength*trust term added to model 1
*Model 3=only bonding tie*trust term added to model 1
*Model 4=only bridging*trust term added to model 1

Tables 4.31 and 4.32 present the summary of the regression results. Including one interaction term, a total of nine independent variables were regressed on subjective norms. As shown in Table 4.16, the nine variables in combination explained 9.8% of the variance on subjective norms, which is even lower than the previous two results. However, the *F*-value (3.444, p<0.00) in Table 4.32 still supports the idea that the results of the regression model are statistically significant. The Durbin-Watson statistic (2.034) in Table 4.31 and VIF and tolerance statistics in Table 4.32 also confirmed that the assumptions of independent error and multicollinearity have not been violated.

Table 4.31 **Model Summary for Subjective Norms**

Model	R	R^2	Adjusted R^2	SE	R^2 Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	0.175	0.031	0.024	1.102	0.031	4.579	2	291	0.01	-
2	0.271	0.073	0.047	1.089	0.043	2.198	6	285	0.04	-
3	0.314	0.098	0.070	1.075	0.025	7.878	1	284	0.01	2.034

Table 4.32 **Summary of Regression Results for Subjective Norms**

Model	Independent Variables	Coefficients			t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	**(Constant)**	4.594	0.661	-	6.953	0.00	-	-
	Age	-0.005	0.006	-0.050	-0.869	0.39	0.994	1.006
	Organization Size	0.316	0.107	0.171	2.956	0.00	0.994	1.006
2	**(Constant)**	4.719	0.688	-	6.860	0.00	-	-
	Age	-0.006	0.006	-0.053	-0.907	0.37	0.959	1.043
	Organization Size	0.260	0.112	0.141	2.325	0.02	0.888	1.127
	Network Size	0.286	0.173	0.097	1.657	0.09	0.95	1.053
	Tie Strength	0.051	0.073	0.044	0.698	0.49	0.831	1.203
	Bonding Degree	0.088	0.237	0.043	0.370	0.71	0.239	4.186
	Bridging Degree	-0.041	0.211	-0.021	-0.193	0.85	0.271	3.692
	Competency Trust	0.145	0.048	0.178	3.046	0.00	0.956	1.046
	Associational Activity	0.000	0.014	0.001	0.017	0.99	0.934	1.071
3	**(Constant)**	4.707	0.680	-	6.924	0.00	-	-
	Age	-0.007	0.006	-0.063	-1.085	0.28	0.955	1.047
	Organization Size	0.275	0.110	0.149	2.486	0.01	0.885	1.129
	Network Size	0.273	0.171	0.092	1.598	0.11	0.949	1.054
	Tie Strength	0.045	0.072	0.039	0.631	0.53	0.831	1.204
	Bonding Degree	0.055	0.234	0.027	0.236	0.81	0.238	4.196
	Bridging Degree	-0.073	0.209	-0.038	-0.347	0.73	0.270	3.703
	Competency Trust	0.117	0.048	0.143	2.423	0.02	0.914	1.095
	Associational Activity	0.000	0.013	0.001	0.010	0.99	0.934	1.071
	Interaction (Bridging Tie *Trust)	-0.210	0.075	-0.163	-2.807	0.01	0.944	1.059

*R^2=0.098; F=3.444, p<0.00
*Dependent Variable: Subjective Norms

The regression results shows that age as a control variable was not significant while the organization's size had significant influence on subjective norms (β =0.141, p< 0.05). Thus, directors in larger organizations will have higher awareness of subjective norms (e.g., I feel these days travelers think DMOs should provide travel information through Web 2.0 technology , and people who influence my behavior at work think that a CVB (DMO) should use Web 2.0 technology for destination marketing and promotion). Competency trust again showed a significant impact on subjective norms (β =0.143, p< 0.05). With regard to the effects of social networks, none of the different types of social ties showed significant influence on subjective norms. However, the interaction term (bridging ties×competency trust) did reveal its significant impact on subjective norms (β =-0.163, p< 0.05). However, the coefficient sign was negative; that is, as the degree of the interaction term (bridging ties×competency trust) increases, directors' awareness of subjective norms decreases. The negative direction may be attributed to the bridging tie. The bridging tie did not have a statistically significant influence on perceived ease of use, but the direction of the coefficient was also negative. This result seems to support the above argument: that a director's excessive reliance on bridging ties may not foster their perceptions related to technology adoption. The interaction graph in Figure 4.11 well shows the moderating effect of competency trust on subjective norms.

As the graph shows, it appears that a bridging tie has a positive impact on the subjective norms when the degree of competency trust is relatively low (-2 standard deviations), but has a negative effect when there exists relatively strong trust (+2 standard deviations) on the perceived ease of use. The result of the interaction test suggests that increasing the degree of the bridging tie for those directors with a lower level of trust will result in the increased awareness of subjective norms. However, for directors with a high level of competency trust, it appears that increased

bridging ties will result in a decrease in the subjective norms.

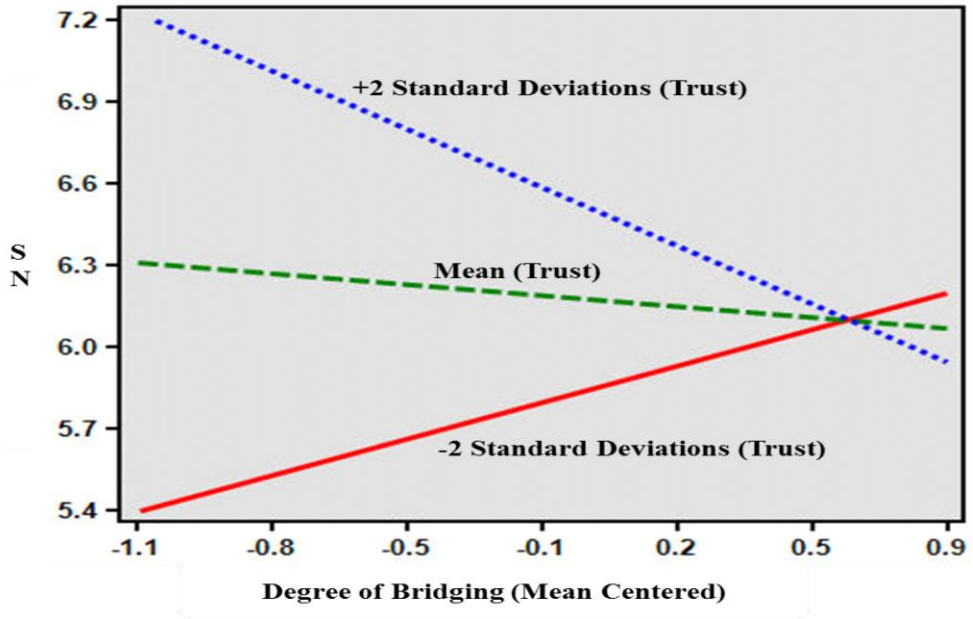

Figure 4.11 **Interaction Graph for Bridging tie and Trust**

Relationships between perceptions about and attitude toward using Web 2.0.

This section tests the relationships between directors' perceptions about Web 2.0 use and attitude toward using Web 2.0 in their organizations. In the model, it was hypothesized that perceived usefulness and ease of use and subjective norms positively affects attitudes toward technology adoption. The test results are presented in Tables 4.33 and 4.34. Including two control variables, a total of five independent variables were regressed and they explained 20.3% of variance in the attitude toward using Web 2.0. The *F*- value (F=14.695, p<0.00) confirmed the validity of the model tested. In addition, the Durbin Watson statistic (2.045) and the acceptable levels of VIF and tolerance statistics indicate no violation of the assumption of multicollinearity and independent error.

The regression result shows the strong effect of subjective norms (β =0.409, p< 0.00) on the attitude toward using Web 2.0 technology. Surprisingly, no significant impacts of the

perceived usefulness (β =-0.003, p= 0.97) and ease of use (β =-1.070, p= 0.29) were found. It is not largely consistent with the previous finding of studies based on TAM. Although several studies reported that perceived ease of use did not have significant influence on the attitude toward using technology, the perceived usefulness has been often indicated as a significant predictor for a higher level of attitude toward using Web 2.0.

Table 4.33 **Model Summary for Attitude toward Using Web 2.0 (1)**

Model	*R*	R^2	Adjusted R^2	SE	R^2 Change	*F* Change	df1	df2	Sig. *F* Change	Durbin-Watson
1	0.155	0.024	0.017	0.629	0.024	3.585	2	291	0.03	-
2	0.450	0.203	0.189	0.572	0.179	21.537	3	288	0.00	2.045

Table 4.34 **Summary of Regression Results for Attitude toward Using Web 2.0 (1)**

Model	Independent Variables	Coefficients			t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	**(Constant)**	5.535	0.377	-	14.674	0.00	-	-
	Age	-0.002	0.003	-0.036	-0.628	0.53	0.994	1.006
	Organization Size	0.161	0.061	0.153	2.643	0.01	0.994	1.006
2	**(Constant)**	4.304	0.401	-	10.74	0.00	-	-
	Age	0.000	0.003	0.004	0.069	0.95	0.891	1.122
	Organization Size	0.083	0.056	0.079	1.473	0.14	0.964	1.038
	Perceived Usefulness	-0.001	0.033	-0.003	-0.044	0.97	0.713	1.402
	Perceived Ease of Use	0.028	0.026	0.063	1.070	0.29	0.790	1.266
	Subjective Norms	0.233	0.036	0.409	6.525	0.00	0.705	1.418

*R^2=0.203; F=14.695, p<0.00
*Dependent Variable: Attitude toward using Web 2.0

The non-significant effect of perceived ease of use on the attitude toward using Web 2.0 can be explained by referring to several studies. Karahanna et al (1999) surveyed PC users in an organization to investigate their intention to use the Windows operating system. They divided the groups into a "potential adopter" group and "user group" in which the members had already

adopted the technology. As a result, they found that perceived ease of use ceased to be important after individuals adopted the technology. A similar result was found in the longitudinal study by Davis et al., (1989) where they surveyed individuals' intention to adopt IT at two different points: after a one hour introduction to the system, and system use after 14 weeks had passed. They also found that while intention was affected by perceived usefulness and ease of use after a one hour introduction, there was no significant effect of perceived ease of use on the intention to use at the end of 14 weeks. Although the Davis et al. study did not test the direct effect of perceived ease of use on the attitude toward using IT, but instead on intention to use, the findings support that perceived ease of use may be a more influential factor for potential adopters than those who have already adopted a certain technology. In this sense, it may be argued that except for one organization, (as the respondents' organizations in this study have already adopted at least one Web 2.0 technology), the perceived ease of use was not an important factor influencing directors' attitudes toward using Web 2.0.

Another reason for the non-significance of the perceived ease of use on the attitude toward using Web 2.0 is similar to the one mentioned above. The respondents in this study were the head of their organization, and so they are likely not to be directly involved in implementing Web 2.0 technology because the actual task of implementing the technology is often delegated to lower level employees. Therefore, whether or not the technology is easy to use would not be an important criterion for them in order to form positive attitudes toward Web 2.0.

Regarding perceived usefulness, as mentioned, there has been significant evidence that perceived usefulness strongly affects an individual's attitude toward using technology. Unfortunately, this study was unable to locate and reference the specific study that showed the non-significant effect of perceived usefulness on attitude toward using technology. However, an

obvious explanation for non-significant influences on not only perceived usefulness but perceived ease of use would be due to the strong effect of subjective norms on the attitude. Given that conventionally, β's above 0.25 are considered to have a large effect, the β (0.409) of subjective norms indicates a very strong effect on the attitude. Therefore, it is suspected that the strong effect of subjective norms may cover the effect of both perceived usefulness and ease of use on the attitude. For this reason, this study conducted another multiple regression where the subjective norms alone was entered in the last block to see whether the addition of subjective norms to the model affected the effects of perceived usefulness and ease of use on the attitude.

As expected, the regression result in Tables 4.35 and 4.36 clearly shows that the effect of perceived usefulness and ease of use was influenced by the subjective norms. In fact, the subjective norms alone explained over half of the total variance (11.8%) in the attitude. More importantly, as shown in Table 35, although the R^2 (0.072) is rather low when subjective norms were excluded in the model, both perceived usefulness (β=0.180, p<0.00) and ease of use (β=0.132, p<0.05) became significant in influencing the attitude, which is consistent with many other studies based on TAM.

This result suggests that the subjective norms may play a role as a confounding variable; that is, it is possible that the subjective norms have a direct impact on the attitude toward using Web 2.0, and at the same time, also directly influence the perceived usefulness and ease of use. The correlation tabulation presented in Table 4.22 above also lends support to this argument, where subjective norms correlated not only with the attitude but also perceived usefulness and ease of use. This idea is also supported by the so-called TAM2 developed by Venkatesh and Davis (2000) where subjective norms were included as a variable influencing perceived usefulness and ease of use with other variables (e.g., job relevance). They found that subjective

norms had a significant direct effect on perceived usefulness and perceived ease of use (only in a mandatory environment). Lu et al. (2005) also examined the effect of subjective norms on perceived usefulness and ease of use related to the adoption of Internet wireless services, and found that subjective norms directly increased the level of both perceptions. Therefore, it is expected that further analyses to test the effect of subjective norms on perceived usefulness and ease of use and its solo effect on the attitude may provide a better understanding. However, such further analyses are performed and discussed in another section and this section remains focused on the proposed research model.

Table 4.35 **Model Summary for Attitude toward Using Web 2.0 (2)**

Model	*R*	R^2	Adjusted R^2	SE	R^2 Change	*F* Change	df1	df2	Sig. *F* Change	Durbin-Watson
1	0.292	0.085	0.072	0.611	0.061	6.716	4	289	0.00	-
2	0.450	0.203	0.189	0.572	0.118	42.570	1	288	0.00	2.045

Table 4.36 **Summary of Regression Results for Attitude toward Using Web 2.0 (2)**

Model	Independent Variables	Coefficients			t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	**(Constant)**	4.581	0.426	-	10.75	0.00	-	-
	Age	0.002	0.004	0.026	0.443	0.66	0.895	1.118
	Organization Size	0.139	0.059	0.133	2.340	0.02	0.987	1.013
	Perceived Usefulness	0.097	0.032	0.180	3.024	0.00	0.894	1.119
	Perceived Ease of Use	0.058	0.027	0.132	2.118	0.04	0.816	1.226
2	**(Constant)**	4.304	0.401	-	10.74	0.00	-	-
	Age	0.000	0.003	0.004	0.069	0.95	0.891	1.122
	Organization Size	0.083	0.056	0.079	1.473	0.14	0.964	1.038
	Perceived Usefulness	-0.001	0.033	-0.003	-0.044	0.97	0.713	1.402
	Perceived Ease of Use	0.028	0.026	0.063	1.070	0.29	0.790	1.266
	Subjective Norms	0.233	0.036	0.409	6.525	0.00	0.705	1.418

*R^2=0.203; *F*=14.695, p<0.00
*Dependent Variable: Attitude toward using Web 2.0

The dominant effect of subjective norms may support the argument that CVBs' Web 2.0 adoption is in the early stages, which was discussed previously. Several studies confirmed that subjective norms are especially influential in increasing technology adoption or intention to use when the adoption of new technology is in the early stages or people have not yet adopted a certain technology (Harwick & Barki, 1994: Morris & Venkatesh, 2000; Venkatesh & Davis, 2000). In particular, Morris and Venkatesh found that within the organizational stetting, subjective norms have a significant influence on the initial decision to use technology and the subjective norm would become non-significant as time passed. The reason may be that because a user's knowledge and beliefs about new technology are vague and ill-formed in the early period of adoption; therefore people rely more on the opinions or choices of others (Hartwick & Barki, 1994). In addition, Venkatesh and Davis (2000) found that as individuals gained direct experience with new technology over time, the decision to adopt was less affected by social influences. Thus, it may be concluded that the dominant effect of subjective norms resulted from the combination of directors having less opportunities for direct experience with Web 2.0 and their early stage of adopting Web 2.0 technology.

Another reason can be found in the study of Jeyaraj et al. (2006) where they conducted an extensive literature review of the predictors for IT adoption by individuals and organizations. For individual IT adoption, top management support, computer experience, perceived usefulness, behavioral intention, and user support were identified as the best predictors for IT adoption. For organization IT adoption, top management support, external pressure, and organization size were identified as the best predictors. Based on their results, given that Web 2.0 adoption is considered as organizational IT use, the strong effect of subjective norms should not be a surprising result.

Relationships between perceived ease of use and perceived usefulness.

Consistent with TAM, this study also proposed that perceived ease of use also has a direct impact on perceived usefulness. Perceived ease of use was regressed with two control variables and they, in combination, explained 9.7% of variance in perceived usefulness. The *F* value (F=11.493, p<0.00) confirmed the validity of the model tested in Table 4.37. In addition, the Durbin Watson statistic (2.031) and the VIF and tolerance statistics in Table 4.38 also indicate the assumptions of multicollinearity and independent error have not been violated. As expected, the perceived ease of use showed the significant impact on perceived usefulness (β =0.317, p< 0.00).

Table 4.37 **Model Summary between Perceived Ease of Use and Perceived Usefulness**

Model	*R*	R^2	Adjusted R^2	SE	R^2 Change	*F* Change	df1	df2	Sig. *F* Change	Durbin-Watson
1	0.128	0.016	0.010	1.175	0.016	2.41	2	291	0.09	-
2	0.326	0.106	0.097	1.122	0.090	29.191	1	290	0.00	2.031

Table 4.38 **Summary of Regression Results between Perceived Ease of Use and Perceived Usefulness**

Model	Independent Variables	Coefficients			t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	**(Constant)**	6.161	0.704	-	8.749	0.00	-	-
	Age	-0.013	0.006	-0.117	-1.998	0.05	0.994	1.006
	Organization Size	0.120	0.114	0.062	1.056	0.29	0.994	1.006
2	**(Constant)**	4.564	0.735	-	6.214	0.00	-	-
	Age	-0.002	0.006	-0.016	-0.276	0.78	0.895	1.117
	Organization Size	0.074	0.109	0.038	0.679	0.50	0.988	1.012
	Perceived Ease of Use	0.257	0.048	0.317	5.403	0.00	0.898	1.114

*R^2=0.122; F=11.493, p<0.00
*Dependent Variable: Perceived Usefulness

Thus, higher levels of perceived ease of use will lead to higher levels of perceived usefulness. This implies that social capital may also be able to influence perceived usefulness by increasing the level of perceived ease of use. This result may provide an important implication about the importance of associational activity in the technology adoption process. In the previous section, the associational activity showed a non-significant effect on perceived usefulness, but it had a significant effect on perceived ease of use. Thus, it appears that associational activity can have positive influences on perceived usefulness via perceived ease of use.

Relationships between perceived usefulness and intention to use.

Based on TAM, this study also hypothesized that perceived usefulness would also have a direct effect on intention to use. Tables 4.39 and 4.40 show the regression results. Perceived usefulness was regressed with two control variables, and they explained 11.3% of variance in intention to use. The *F* value (F=13.428, p<0.00) confirmed the validity of the model tested. In addition, the Durbin Watson statistic (2.052) and the VIF and tolerance statistics also indicated that the assumption of multicollinearity and independent error has not been violated. As expected, the regression result shows that perceived usefulness had a direct impact on intention to use (β =0.451, p< 0.00).

Thus, directors' higher awareness of perceived usefulness about Web 2.0 technology influenced by social capital will have direct and indirect effects on increasing their intention to use the technology for their organization.

Table 4.39 **Model Summary for Intention to Use (1)**

Model	*R*	R^2	Adjusted R^2	SE	R^2 Change	*F* Change	df1	df2	Sig. *F* Change	Durbin-Watson
1	0.201	0.040	0.034	0.891	0.040	6.138	2	291	0.00	-
2	0.349	0.122	0.113	0.854	0.081	26.885	1	290	0.00	2.052

Table 4.40 **Summary of Regression Results for Intention to Use (1)**

Model	Independent Variables	Coefficients			t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	4.633	0.534	-	8.675	0.00	-	-
	Age	-0.007	0.005	-0.078	-1.354	0.18	0.994	1.006
	Organization Size	0.287	0.086	0.191	3.324	0.00	0.994	1.006
2	(Constant)	3.272	0.575	-	5.689	0.00	-	-
	Age	-0.004	0.005	-0.044	-0.800	0.42	0.981	1.019
	Organization Size	0.26	0.083	0.174	3.142	0.00	0.991	1.009
	Perceived Usefulness	0.221	0.043	0.288	5.185	0.00	0.984	1.017

*R^2=0.122; F=13.428, p<0.00
*Dependent Variable: Intention to Use

Relationships between attitude toward using Web 2.0 and intention to use.

Tables 4.41 and 4.42 present the summary of the model tested for the relationship between attitude and intention to use. Attitude was regressed with two control variables, and they explained 23.9% of variance in intention to use. The F value (F=30.420, p<0.00) confirmed the validity of the model tested. In addition, the Durbin Watson statistic (1.990) and the VIF and tolerance statistics also indicate no violation of the assumption of multicollinearity and independent error. Consistent with previous studies, the regression result shows the significant influence of attitude toward using Web 2.0 (β =0.451, p< 0.00) on intention to use Web 2.0 technology.

Thus, higher levels of attitude toward using Web 2.0 will lead to higher levels of intention to use the technology. Interestingly, in the previous section the size of the organization was strongly associated with the level of Web 2.0 adoption, while the attitude toward using Web 2.0 had a higher degree of effect on the intention to use than the size of the organization (β =0.122, p< 0.05). This may mean that unlike the actual level of Web 2.0 adoption, the intention

to use Web 2.0 is influenced more strongly by directors' attitudes about the technology and not by the size of the organization.

Table 4.41 **Model Summary for Intention to Use (2)**

Model	*R*	R^2	Adjusted R^2	SE	R^2 Change	*F* Change	df1	df2	Sig. *F* Change	Durbin-Watson
1	0.201	0.040	0.034	0.891	0.040	6.138	2	291	0.00	
2	0.489	0.239	0.231	0.795	0.199	75.827	1	290	0.00	1.948

Table 4.42 **Summary of Regression Results for Intention to Use (2)**

Model	Independent Variables	Coefficients			T	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	**(Constant)**	4.633	0.534	-	8.675	0.00	-	-
	Age	-0.007	0.005	-0.078	-1.354	0.18	0.994	1.006
	Organization Size	0.287	0.086	0.191	3.324	0.00	0.994	1.006
2	**(Constant)**	1.065	0.628	-	1.695	0.09	-	-
	Age	-0.005	0.004	-0.062	-1.197	0.23	0.993	1.007
	Organization Size	0.183	0.078	0.122	2.35	0.02	0.971	1.030
	Attitude	0.645	0.074	0.451	8.708	0.00	0.976	1.025

*R^2=0.239; *F*=30.420, *p*<0.00
*Dependent Variable: Intention to Use

Relationships between intention to use and actual use.

Table 4.43 presents the summary of the model tested for the relationship between the attitude and intention to use. Intention to use was regressed with two control variables, and they explained 22.3% of variance in actual use. The *F* value (*F*=27.792, *p*<0.00) confirmed the validity of the model tested. In addition, the Durbin Watson statistic (1.990) and the VIF and tolerance statistics also indicated no violation of the assumption of multicollinearity and independent error. As shown in Table 4.44, the intention to use was statistically significant (β =0.143, *p*< 0.00) on influencing actual the use of Web 2.0.

Table 4.43 **Model Summary for Actual Use**

Model	*R*	R^2	Adjusted R^2	SE	R^2 Change	*F* Change	df1	df2	Sig. *F* Change	Durbin-Watson
1	0.451	0.204	0.198	2.540	0.204	37.224	2	291	0.00	-
2	0.473	0.223	0.215	2.513	0.020	7.312	1	290	0.01	1.990

Table 4.44 **Summary of Regression Results Actual Use**

Model	Independent Variables	Coefficients			t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	**(Constant)**	-5.890	1.523	-	-3.868	0.00	-	-
	Age	0.017	0.014	0.065	1.249	0.21	0.994	1.006
	Organization Size	2.072	0.246	0.442	8.420	0.00	0.994	1.006
2	**(Constant)**	-7.962	1.690	-	-4.711	0.00	-	-
	Age	0.020	0.014	0.077	1.472	0.14	0.988	1.012
	Organization Size	1.944	0.248	0.414	7.837	0.00	0.958	1.044
	Intention to Use	0.447	0.165	0.143	2.704	0.01	0.960	1.042

*R^2=0.223; *F*=27.792, p<0.00
*Dependent Variable: Actual to Use

However, as shown in Table 4.44, although intention to use alone could have a significant effect, it appeared that the size of the organization had a much stronger effect on actual use. This can be interpreted to mean that although there is no doubt that a director's intention significantly influences the organizational decision to use Web 2.0 technology, their decision is also made by taking into consideration the organizational structure. In particular, as mentioned above in the findings of Jeyaraj et al. (2006), the organization's size is one of the best predictors of IT adoption and thus also supports this argument. More specifically, if the study focuses on an individual's use of Web 2.0, each person's personal intention may explain the substantial variance in an individual's actual use. However, when it comes to organizational use, the director's opinion and intention may not fully affect the actual use. Rather, technology

adoption in an organization may be a result derived from a combination of effects: not only the intention by other directors, but also the intention by influential employees and organizational structures like size and budget. This may also explain why, when compared to other studies that used TAM and TRA to focus on an individual's technology adoption, this study had relatively lower R^2 values explaining the technology adoption process (e.g., perceptions to attitudes and attitude to intention).

4.4.3 Summary of Hypotheses Test for Research Question 3

This section summarizes the results of the hypotheses test for research question 3. For hypotheses related to social capital-related variables and technology adoption-related perceptions, the test results revealed that competency trust was significant in influencing all three perceptions (perceived usefulness, perceived ease of use, and subjective norms). Given that competency trust was not significant in a direct relationship with actual use, the result implies that competency trust has indirect effects on actual use by influencing directors' perceptions about using Web 2.0 technology. Another interesting finding was the role of bridging ties. The bridging ties demonstrated a significant impact on perceived usefulness, but it was negatively related. Through further analysis, it was concluded that directors' excessive reliance on bridging ties may not foster the formation of positive perceptions related to Web 2.0 use. For the relationship between social capital and perceived usefulness, only the hypotheses of competency trust and associational activity were supported. With regard to social capital and subjective norms, as only competency trust showed a significant effect on subjective norms, other hypotheses were rejected.

In terms of the synergy effect of trust, interaction tests showed that the effect of the weaker tie was moderated by the degree of competency trust; that is, when the weaker ties were based on

strong trust, the effect of the weaker tie was significantly increased in the degree of perceived usefulness. Given that the weaker tie itself was not significant, it also provides strong support for the importance of trust in increasing perceived usefulness. However, none of the interaction effects were found for perceived ease of use. For subjective norms, it was found that the degree of the bridging tie was also moderated by the trust, as the interaction showed a negative impact on subjective norms. The study also supports the idea that strong reliance has a negative impact on the bridging ties.

Regarding the technology adoption process, the findings revealed that subjective norms have a substantial effect on the attitude toward using Web 2.0 while the other two perception variables (perceived usefulness and ease of use) did not show a significant influence on the attitude. Consistent with TAM, the attitude was significant in affecting intention to use, and the intention also had a significant impact on the degree of actual use. The summary of the results of the hypotheses test is provided in Figure 4.12 and Table 4.45 describes the result of the hypotheses tests based on significant variables.

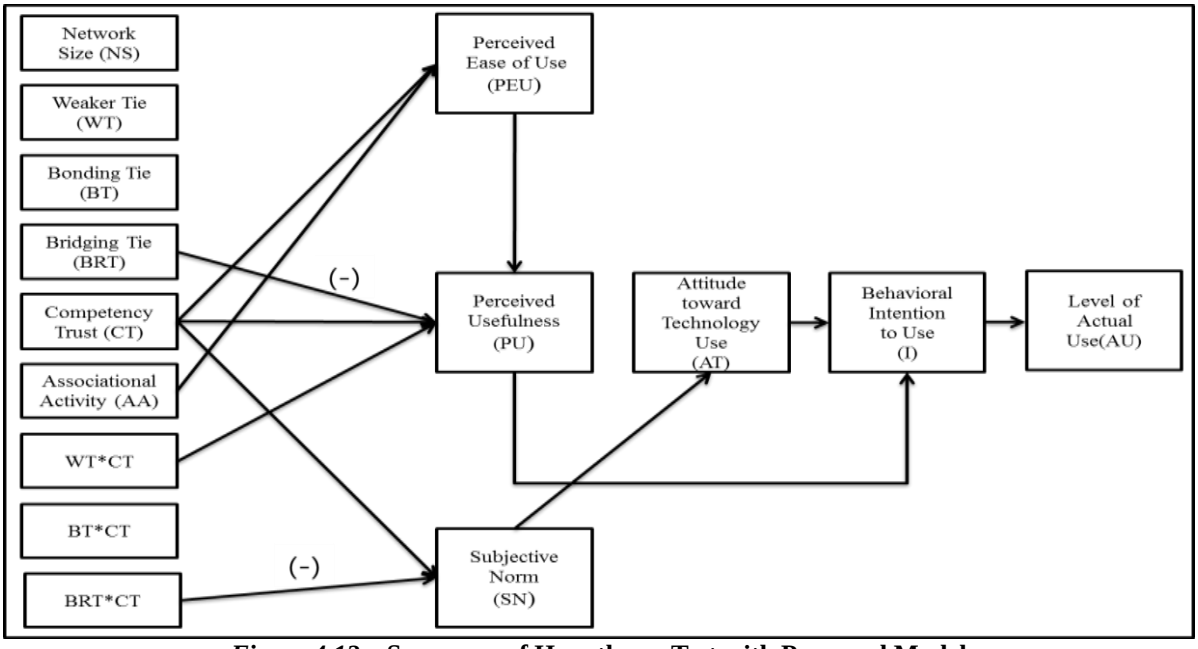

Figure 4.12 **Summary of Hypotheses Test with Proposed Model**

Table 4.45 **Summary of hypotheses Test for RQ 3**

Hypotheses				Result
Social network and Perceptions	Network size and Perception	H7a	The size of networks → perceived usefulness	Reject
		H7b	The size of networks → perceived ease of use	Reject
		H7c	The size of networks → subjective norms	Reject
	Tie strength and Perceptions	H8a	The weaker tie → perceived usefulness	Reject
		H8b	The weaker tie →perceived ease of use	Reject
		H8c	The weaker tie → subjective norms	Reject
	Tie externality and Perceptions	H9a	The higher degree of bonding → perceived usefulness	Reject
		H9b	The degree of bonding → perceived ease of use	Reject
		H9c	The degree of bonding ties → subjective norms	Reject
		H9d	The degree of bridging ties → perceived usefulness	Partially supported
		H9e	The degree of bridging ties → perceived ease of use	Reject
		H9f	The degree of bridging ties → subjective norms	Reject
		H9g	Bridging ties have a stronger positive influence on each perception than bonding ties	Reject
	Trust and Perceptions	H10a	Trust in a tie's competency → perceived usefulness	Accept
		H10b	Trust in a tie's competency → perceived ease of use	Accept
		H10c	Trust in a tie's competency → subjective norms	Accept
	Interaction effects and Perceptions	H11a	Interaction effect of the weaker tie and competency trust → perceived usefulness	Accept
		H11b	Interaction effect of the weaker tie and competency trust → perceived ease of use	Reject
		H11c	Interaction effect of the weaker tie and competency trust on subjective norms	Reject
		H11d	Interaction effect of the bonding tie and competency trust → perceived usefulness	Reject
		H11e	Interaction effect of a bonding tie and competency trust → perceived ease of use	Reject
		H11f	Interaction effect of a bonding tie and competency trust →subjective norms	Reject
		H11g	Interaction effect of a bridging tie and competency trust → perceived usefulness	Reject
		H11h	Interaction effect of a bridging tie and competency trust → perceived ease of use	Reject
		H11i	Interaction effect of a bridging tie and competency trust → subjective norms	Partially supported
	Associational Activity and Perceptions	H12a	Associational activity → perceived usefulness	Reject
		H12b	Associational activity → perceived ease of use	Accept
		H12c	Associational → subjective norms	Reject
Perceptions and Attitudes	Perceived Ease of Use	H13a	Perceived ease of → perceived usefulness	Accept
		H13b	Perceived ease of use → the attitude toward Web 2.0 use	Reject
	Subjective Norms	H14	Subjective norms → the attitude toward Web 2.0 use	Accept
	Perceived Usefulness	H15a	Perceived usefulness → the attitude toward Web 2.0 use	Reject
		H15b	Perceived usefulness → on intention to use Web 2.0	Accept
Attitude and Intention	Attitude	H16	The attitude toward Web 2.0 → intention to use	Accept
Intention and Actual Use	Behavioral Intention to Use	H17	The behavioral intention to use → actual use	Accept

4.5 Revisiting the Proposed Research Model

This section re-visits the proposed research model by focusing primarily on the issue related to the effect of subjective norms. As discussed in the previous section, the multiple regression and further analysis (see Table 4.36) related to the association between subjective norms and other perception variables led to the idea that in fact, subjective norms may have direct influences on not only the attitude toward using Web 2.0, but also on the perceived usefulness and perceived ease of use. Thus, this study proposed a modified model that included subjective norms in the components of social capital that affect perceptions. Therefore, the effect of social capital on perceptions about Web 2.0 use was re-tested with the inclusion of subjective norms in the model.

One of the underlying assumptions of this study was that social capital factors may influence technology adoption by DMOs by influencing directors' perceptions about Web 2.0 use. Given that the subjective norms were also indicated as one of the important components of social capital in this study, the inclusion of subjective norms in other social capital variables may not damage the logic of this study. In addition, the fact that the regression result for subjective norms showed the lowest explanatory power (R^2=0.098) also encouraged the inclusion of subjective norms as one of the social capital variables influencing directors' perceptions rather than one being affected by other social capital variables.

To test whether the addition of subjective norms as an independent variable for perceived usefulness and ease of use are statistically significant, the hierarchical method was again used and the subjective norms were entered in last block. Table 4.46 presents the R^2 change when the subjective norms were included in the model tested in the previous section. As shown in Table 4.46, the inclusion of subjective norms in social capital variables produced much

better results than those without subjective norms. The R^2 value was dramatically changed (ΔR^2=0.197, p<0.05) and it was also statistically significant.

Table 4.46 **R^2 Change with Inclusion of Subjective Norms (1)**

Model	*R*	R^2	Adjusted R^2	SE	R^2 Change	*F* Change	df1	df2	Sig. *F* Change	Durbin-Watson
1	0.377	0.142	0.115	1.110	0.142	5.227	9	284	0.00	-
2	0.583	0.340	0.316	0.976	0.197	84.611	1	283	0.000	1.904

Moreover, the interaction effects (bonding×trust and bridging×trust), which were not significant in the proposed model, were re-tested, and it was found that the addition of the interaction term (bridging tie×competency trust) to the model is significant (ΔR^2=0.023, p<0.01). Therefore, Table 4.47 presents regression results for the perceived usefulness where subjective norms and one interactive term were included. The final model in Table 4.47 explained 35.7% variance in perceived usefulness; that is, 21.5% of variance was additionally explained with the inclusion of subjective norms. In addition, the subjective norms show the highest degree of effect on perceived usefulness (β =0.485, p< 0.00). This means that the directors' perceived usefulness was strongly affected by subjective norms. Although the coefficient value (β) of each variable was changed, there was no significant change in comparison to the proposed model; that is, no variables became significant or non-significant. However, a significant interaction effect of bridging ties and trust was found. Interestingly, the coefficient is positive even though bridging ties are negatively related to perceived usefulness. This study interprets this to mean that even though excessive reliance on bridging ties had a negative effect on perceived usefulness, if directors' competency trust in their ties is strong, the bridging ties also positively affect perceived usefulness. This is because, as mentioned before, the information from people in another industry may not be directly related to destination marketing.

The graph in Figure 4.13 clearly shows the importance of strong competency trust. As the degree of bridging ties increases, the perceived usefulness for directors with relatively lower trust (mean or -2 standards) also decreases. However, the perceived usefulness for directors who have stronger trust (+2 standards) increases as the degree of bridging ties increases.

Table 4.47 **Regression Results for Perceived Usefulness**

Model	Independent Variables	Coefficients			t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	**(Constant)**	3.966	0.659	-	6.019	0.00	-	-
	Age	-0.011	0.005	-0.100	-2.039	0.04	0.951	1.052
	Organization Size	-0.056	0.100	-0.029	-0.555	0.58	0.865	1.155
	Network Size	0.029	0.154	0.009	0.191	0.85	0.940	1.064
	Tie Strength	-0.082	0.064	-0.067	-1.280	0.20	0.830	1.205
	Bonding Degree	-0.264	0.211	-0.123	-1.249	0.21	0.236	4.236
	Bridging Degree	-0.409	0.188	-0.200	-2.176	0.03	0.268	3.725
	Competency Trust	0.180	0.045	0.208	4.017	0.00	0.848	1.179
	Associational Activity	-0.013	0.012	-0.052	-1.050	0.30	0.933	1.071
	Subjective Norms	0.513	0.053	0.485	9.643	0.00	0.900	1.111
	Interaction (Tie Strength *Trust)	0.088	0.039	0.111	2.240	0.03	0.920	1.087
	Interaction (Bridging Tie *Trust)	0.192	0.069	0.141	2.783	0.01	0.894	1.119

*R^2=0.357.; *F*=14.247, *p*<0.00
*Dependent Variable: Perceived Usefulness

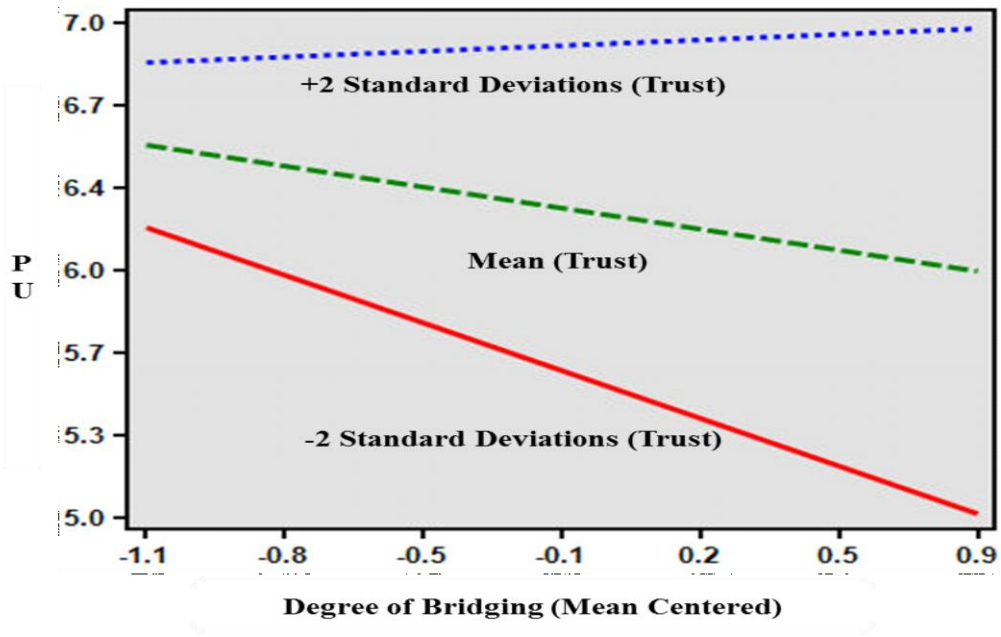

Figure 4.13 **Interaction Graph of Bridging Ties and Trust**

The same procedure was conducted to test the relationship between social capital and perceived ease of use by including subjective norms as an independent variable. As Table 4.48 shows, the R^2 changed when subjective norms were added in the model. Although R^2 was not changed as much as the case of perceived usefulness, the total % of variance was substantially increased (ΔR^2=0.071, p<0.00). Interaction terms were again tested, but none of the interactions were significant. Therefore, including subjective norms as an independent variable, the regression results for perceived ease of use are presented in Table 4.49. Interestingly the competency trust became non-significant after adding subjective norms in the model. This result appears to be because of a suppression effect (Cohen & Cohen, 1984); that is, it seems that the stronger effect of subjective norms diminished the effect of competency trust. Multicollinearity problems would not explain this result given the low VIF and higher tolerance.

Table 4.48 R^2 **Change with Inclusion of Subjective Norms (2)**

Model	*R*	R^2	Adjusted R^2	SE	R^2 Change	*F* Change	df1	df2	Sig. *F* Change	Durbin-Watson
1	0.364	0.132	0.108	1.372	0.132	5.435	8	285	0.00	-
2	0.451	0.203	0.178	1.317	0.071	25.329	1	284	0.00	1.959

Table 4.49 **Regression Results for Perceived Ease of Use**

Model	Independent Variables	Coefficients			t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	**(Constant)**	4.741	0.898	-	5.277	0.00	-	-
	Age	-0.043	0.007	-0.314	-5.796	0.00	0.956	1.046
	Organization Size	0.012	0.136	0.005	0.085	0.93	0.871	1.148
	Network Size	-0.005	0.210	-0.001	-0.022	0.98	0.940	1.063
	Tie Strength	-0.084	0.088	-0.055	-0.951	0.34	0.830	1.205
	Bonding Degree	0.123	0.287	0.047	0.430	0.67	0.239	4.188
	Bridging Degree	0.155	0.256	0.062	0.607	0.54	0.271	3.693
	Competency Trust	0.083	0.059	0.078	1.425	0.16	0.926	1.080
	Associational Activity	0.034	0.017	0.111	2.028	0.04	0.934	1.071
	Subjective Norms	0.361	0.072	0.277	5.033	0.00	0.927	1.079

*R^2=0.203.; F=13.985, p<0.00
*Dependent Variable: Perceived Ease of Use

The previous section confirmed the significant direct effects of subjective norms on perceived usefulness and perceived ease of use. In following, the solo effect of subjective norms on attitude toward using Web 2.0 is presented in Table 4.50 and 4.51. As expected, the results confirmed the significant direct effect of subjective norms. The regression result for the attitude shows that subjective norms with two control variables explained 20% of variance in the attitude. It also shows that subjective norms itself explained around 18% of variance in the attitude.

Other multiple regression analyses (e.g., attitude to intention and intention to actual use) were not conducted because the results are the same as those presented in the section for research question 3.

Table 4.50 **Summary of Regression Model for Attitude toward Using Web 2.0**

Model	*R*	R^2	Adjusted R^2	SE	R^2 Change	*F* Change	df1	df2	Sig. *F* Change	Durbin-Watson
1	0.155	0.024	0.017	0.629	0.024	3.585	2	291	0.03	
2	0.447	0.200	0.191	0.571	0.176	63.622	1	290	0.00	2.044

Table 4.51 **Regression Result for Attitude toward Using Web 2.0**

Model	Independent Variables	Coefficients			t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	**(Constant)**	5.535	0.377	-	14.674	0.00	-	-
	Age	-0.002	0.003	-0.036	-0.628	0.53	0.994	1.006
	Organization Size	0.161	0.061	0.153	2.643	0.01	0.994	1.006
2	**(Constant)**	4.423	0.370	-	11.969	0.00	-	-
	Age	-0.001	0.003	-0.015	-0.286	0.78	0.992	1.008
	Organization Size	0.085	0.056	0.081	1.509	0.13	0.965	1.036
	Subjective Norms	0.242	0.030	0.426	7.976	0.00	0.969	1.031

*R^2=0.200; *F*=7.854, *p*<0.00
*Dependent Variable: Attitude toward Using Web 2.0

In sum, the modified model, which included subjective norms in the variables of social capital, produced better results. Given that this study may be considered as the first attempt to try the integration of social capital into the technology adoption process, the relatively low explanatory power (R^2=0.10 to 0.14) of social capital on perceived usefulness and perceived ease of use would still be acceptable. However, when the subjective norms were included as a component of social capital in the model, model fit (explanatory power) was significantly improved. The results were not significantly different from the proposed model; that is, the modified model still supported the important impact of competency trust and subjective norms on directors' perceptions about Web 2.0 adoption. From the further analyses with the modified model, the results of this study are summarized in Figure 4.14.

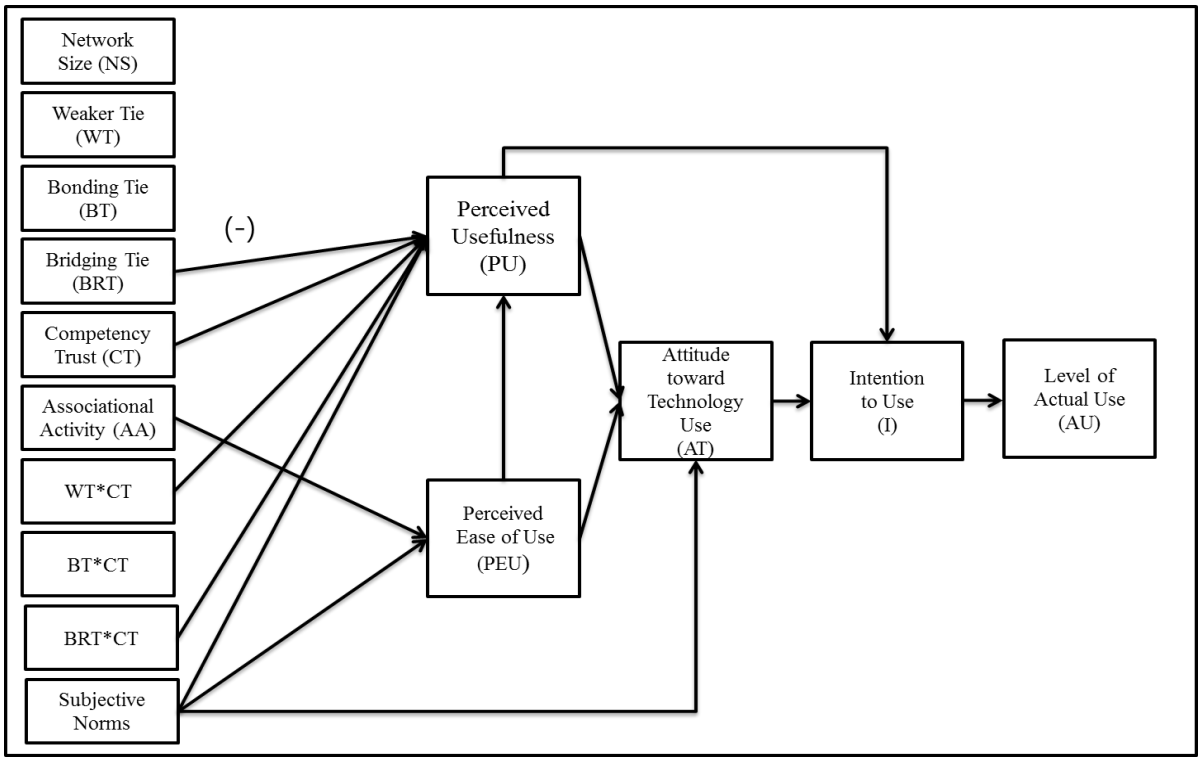

Figure 4.14 **Summary of Modified Model Test**

4.6 Summary of Chapter

This chapter first presented the current status of CVBs' use of Web 2.0 technology. Based on the amount of Web 2.0 technology adoption, it seems that Web 2.0 technology use by CVBs is in the early stages, where CVBs have recently increased their adoption of Web 2.0 technology. The patterns of the CVB directors' social networks were explored. The bridging tie was identified as the dominant tie; that is, it appeared that CVB directors relied more on bridging ties for technology-related information gain. However, when respondents were divided into three groups according to the level of actual Web 2.0 use, the high adoption group showed that their social networks tend to be composed more of bonding ties than bridging ties. In addition, it appeared that the high adoption group was involved in more associational activity and a higher volume of social networks than the low adoption group.

Regarding the direct impact of social capital on the adoption of Web 2.0 technology by CVBs, this study strongly supported the conclusion that social capital is an influential factor that facilitates the adoption of new technology by CVBs. Except for trust and weaker ties, most social capital variables showed significant effects on the level of CVB Web 2.0 use. The multiple regression analysis also confirmed that although directors' bridging ties also have a significant influence on technology adoption, the effect of bonding ties was stronger than bridging ties.

With regard to the indirect impact of social capital on perceptions about, and attitude toward, using Web 2.0, the findings clearly distinguished the roles of different components of social capital in facilitating technology adoption. Competency trust was identified as an important factor influencing directors' perceptions about Web 2.0 use. In addition, trust also moderated the effect of bridging ties on perceived usefulness. Importantly, it turned out that the weaker ties themselves did not have a significant effect on perceived usefulness, and an interaction effect with trust was found. That is, directors' weaker ties would be more helpful for increasing perceived usefulness if there is strong trust in their ties' competency as related to technology knowledge. Directors' bridging ties showed a negative impact on perceived usefulness, and through further analysis (curve estimation), this study concluded that excessive dependency on bridging ties would not be beneficial for perceived usefulness.

Subjective norms were also an important factor. It appeared that directors' attitudes toward using Web 2.0 were largely influenced by subjective norms rather than perceived usefulness and perceived ease of use. Through further analysis, this study proposed that subjective norms may have direct impacts on both perceptions and attitudes. Therefore this study proposed the modified model in which subjective norms were treated as a social capital variable influencing perceived usefulness and perceived ease of use. The modified model produced better

results, increasing explanatory power as expected, and subjective norms showed strong influence on both perceived usefulness and perceived ease of use. Importantly, with the inclusion of subjective norms as a social capital variable, the interaction effect of bridging ties with trust became significant, and a better explanation about the effect of bridging ties was provided. That is, the findings suggest that the increase in the degree of bridging ties can be beneficial for perceived usefulness if strong trust exists in the ties.

In the following chapter, the findings of this research are discussed in detail, and several implications are drawn based on those findings. Limitations of this study and suggestions for future study are also discussed.

CHAPTER V

DISCUSSION AND CONCLUSION

This chapter first provides a brief overview of the research, and then discusses major findings of the study in detail. Based on the findings and discussions, several implications are drawn. Lastly, the limitations of this study and directions for future study are discussed.

5.1 Study Overview

Tourism is one of the most important economies in the world. With the rapid growth of the tourism industry, competition among tourism destinations continues to intensify. Thus, the ability to manage effective marketing tools to communicate with potential travelers is an essential element for successful destination marketing and promotion. Undoubtedly, the Internet plays an increasingly major role in delivering destination information, and the recent advent of Web 2.0 technologies have changed not only the ways travelers seek destination information, but also how DMOs provide it. In Web 2.0, DMOs are no longer considered as being just destination information providers, as considerable destination information is created by fellow travelers. Therefore, DMOs adopting these new communication tools are more likely to gain a competitive advantage or at minimum keep up with competition. However, DMOs, especially many small organizations, are often overwhelmed by the prospect of keeping track of the fast growing Web 2.0 technology and integrating it into their marketing strategies, and have been found to be significantly deficient in adopting the technology (Lee & Wicks, 2010; Schegg et al, 2008). This means that there is a strong need for effective ways to facilitate DMOs' new technology adoption.

Thus, this research proposed that social capital would be an important asset that helps DMOs gain information that facilitates the adoption of Web 2.0 technology. In other words, this

study tried to assess the role of social interactions in technology adoption by DMOs. In this study, social capital was defined as an actor's ability to gain any kind of valuable resource embedded in social relationships. The social capital concept has been applied to innovation studies because of its ability not only to facilitate information sharing through social interaction among networked people, but also to encourage the networked members to comply with certain norms and expectations related to innovation (e.g., new technology adoption). More specifically, this study tried to address three research questions related to the roles of social capital on technology adoption:

d) What are the characteristics of social ties that DMO managers rely on for gaining information relevant to tourism technology?

e) What is the relationship between the characteristics of a DMO manager's social capital (networks) and the DMO's technology adoption?

f) How does social capital affect a DMO's technology adoption process?

As key components of social capital, this study has chosen the most agreed upon and common components of social capital: 'social networks', 'trust' toward networked people and 'norms'. Regarding social networks, it was further specified based on a tie's strength (strong and weak ties) and externality (bonding and bridging ties). Tie strength refers to the degree of intimacy, and was assessed by five dichotomous variables (e.g., friend or acquaintance). As the weak tie stresses its potential to acquire novel or non-redundant information that generally does not pre-exist or is not shared among strongly connected people, the study proposed that weaker ties would have a stronger effect on DMOs' Web 2.0 adoption than stronger ties.

For bonding and bridging ties, this study separately assessed bonding and bridging ties by identifying four different types of relationships based on the similarity of relational ties

related to a DMO manager's job. The tie was considered a 'bonding tie' if DMO managers were in a relationship with people working in the same or other DMOs, and a 'bridging tie' if DMO managers were in a relationship with people in other areas besides DMOs. Further, bonding ties were divided into two categories: people in the same DMO and those in other DMOs. The former bonding tie was considered stronger than the latter tie in terms of the intensity of bonding. For bridging ties, two types of ties were identified: people in a tourism business but not a DMO (e.g., restaurants, travel agencies, museums, etc.), and those in another industry (neither a DMO nor the tourism industry). Likewise, the latter bridging tie was considered as stronger than the former tie in terms of the function of bridging.

The primary advantage of bonding ties emphasizes that more effective communication about newness, such as new technology, occurs within the existence of two or more individuals who have a lot in common (e.g., similar job). Similar to weak ties, bridging ties stress that the ties are beneficial for access to external resources and for novel information gain. This study proposed that as both ties have relative advantages for information gain and facilitating technology adoption, each tie would have a significant effect on DMOs' information gain and technology adoption in dissimilar ways. In addition, by admitting the effectiveness of both ties in facilitating DMOs' technology adoption, this study also proposed that in the case of DMOs' Web 2.0 technology adoption, bridging ties may be more effective than bonding ties due to their added ability to provide a wide range of information sources.

With regard to trust, among diverse types of trust 'competency trust' was chosen as an especially important type of trust related to technology adoption. This study emphasized its effectiveness for conveying persuasive knowledge. That is, it was proposed that individuals are more likely to absorb knowledge and suggestions when these are shared with, and provided from,

a person whom they competently trust, which in turn influences technology adoption. Moreover, it was also proposed that the effects of different types of relational ties (e.g., weak, bonding, and bridging ties) on technology adoption are enhanced with the existence of strong trust in the technological competency of networked people.

Regarding norms, this study particularly chose subjective norms which are formed and perceived in social networks. With respect to Web 2.0 adoption, subjective norms refer to the person's perception of the social pressure from relevant others (salient referents) to adopt/use Web 2.0 technology (e.g., "I feel these days travelers think DMOs should provide travel information through Web 2.0 technology", and "people who influence my behavior at work think that a CVB (DMO) should use Web 2.0 technology for destination marketing and promotion"). Thus, the study proposed subjective norms as an important factor in encouraging DMOs to adopt Web 2.0 technology in an effort to comply with others' expectations and opinions related to Web 2.0 adoption.

Besides the three main components of social capital, associational activity (number of memberships in various voluntary organizations) was also considered as an important social capital-related factor. Importantly, adopting the concept of ground theory that emphasizes spontaneous and serendipitous information sharing in a variety of places, this study proposed that managers' involved in diverse associational activities helps them gain technology-related information and build diverse social networks.

Based on the roles of social capital in facilitating information gain and encouraging DMO managers' Web 2.0 adoption, the research model for this study proposed that social capital may both directly and indirectly affect DMOs' technology adoption by increasing positive perceptions about, and attitude toward, technology use. To assess direct and indirect roles on

technology adoption, the research model was developed by adopting two theoretical models (Theory of Reasoned Action and Technology Acceptance Model) that explain DMO managers' decision processes for Web 2.0 technology adoption. In the proposed research model, the components of social capital were expected to directly and indirectly influence DMO managers' perceptions and attitudes about Web 2.0 technology adoption, which subsequently affects the level of a DMO's actual Web 2.0 use for destination marketing.

In the following, major findings that address three of the research questions are presented and discussed in detail, and several implications in terms of theory, methodology, and practice are drawn based on the findings.

5.2 Discussion of Major Findings

The findings provided strong evidence that social capital is a significant asset for a DMO in the adoption of Web 2.0 technologies. More importantly, the findings showed that each component of social capital influenced Web 2.0 adoption in different ways. In other words, as this study proposed, social capital showed a direct and indirect effect related to technology adoption.

Weak ties.

The study found that overall, directors gained technology information through weaker ties. However, unlike the expectation, it appeared that the weak tie did not show a distinct effect on technology adoption. More specifically, no direct effect of weaker ties on either the actual level of Web 2.0 adoption or perceptions related to Web 2.0 use was found. This may mean that once directors perceived a person as an important source for technology-related information gain,

whether or not the tie was strong may not have played a critical role in exchanging information and facilitating technology adoption.

However, the importance of weaker ties was partially supported by its interaction effect with competency trust. This effect showed that directors' weaker ties could also increase their perceived usefulness if the ties are based on strong competency trust. The important advantage of weaker ties is that the ties can provide relatively new information, such as information about a new technology. However, weaker relationships have relatively less opportunity to communicate about the new information in comparison to stronger ties, which may result in the non-significant effect of weaker ties as found in this study. Thus, unless strong competency trust does exist in the weaker relationships, the information gained from weakly connected persons may be less effective in influencing perceptions and then leading to actual implementation. This is a typical advantage of strong trust in information exchange. In other words, although information is not frequently exchanged in the relationships of weaker ties, the weaker relationships with strong trust might enable the absorption of information which can affect the change of perceptions toward technology adoption.

Bonding ties.

The findings identified that after controlling for the size of the organization, the bonding ties had the most influential direct effect on the adoption of Web 2.0 technology. The strength of bonding ties was also supported by the pattern of directors' network ties. When respondents were divided into three groups based on the numbers of Web 2.0 technologies that were adopted, the high adoption group showed that their degree of bonding ties tended to be higher than that of the low adoption group. Even though more directors relied on bridging ties for technology

information gain, the direct effect of bonding ties on actual Web 2.0 use was stronger than that of bridging ties. In fact, this study hypothesized that bridging ties may have a stronger effect than bonding ties. As Web 2.0 technologies are currently being used by many other industries with similar purposes, it was expected that bridging ties may be able to play the roles usually filled by bonding ties. In other words, it was expected that because Web 2.0 technology is not designed especially for use by CVBs, the adoption of Web 2.0 by different types of businesses may also significantly stimulate the adoption by CVBs. However, the results showed that there were still differences between the use of Web 2.0 in CVBs when compared to other industries.

However, it is interesting to note that while the bonding tie had the strongest degree of direct effect on technology adoption, no effects on perceived usefulness and perceived ease of use were found. It seems that bonding ties directly affected directors' decision to adopt Web 2.0 rather than influencing their perceptions related to Web 2.0. Two possible reasons may explain the strong direct effect of bonding ties on technology adoption and the non-significant effect on perceptions. In this study, two types of bonding ties were identified: relationships with people working a) at the same organization and b) at other CVBs. For the former bonding ties, reliance on a person at same organization may also mean that the organization may have employees who may be in charge of implementing Web 2.0 or other internet-related technology. Therefore, as already discussed, the directors of the organization may have left the decision about IT-related marketing up to the employees after receiving basic information. Thus, it is possible that the existence of employees in charge of Web 2.0 may play an important role in facilitating or encouraging directors' decisions to adopt Web 2.0, but at the same time, it might also lead directors to put less personal effort into learning about Web 2.0 and finding useful information related to Web 2.0 use.

For the latter bonding ties, the results may support the primary advantage of bonding ties related to peer technology adoption. Innovation and social capital studies relevant to technology adoption repeatedly indicate that new technology adoption is effectively facilitated by its adoption by peers who have a lot in common. In this sense, when directors indicated a person in another CVB as an important source of Web 2.0 information, it is likely that to some extent, that person's CVB had already adopted Web 2.0 technology for destination marketing. Web 2.0 adoptions by the same type of organization may enable or force directors to emulate the technology adoption without going through further in-depth investigation about the usefulness of Web 2.0.

Bridging ties.

The results of bridging ties are rather dynamic. First, it turned out that the dominant tie of directors for technology information gain was a bridging tie. Although the high adoption group tended to have a lower level of bridging ties, the difference among groups in the degree of bridging ties was not significant. This may mean that for information gain, directors were involved with bridging ties to a similar degree. The bridging tie had a significant direct influence on the level of Web 2.0 adoption, but the magnitude of its effect was not stronger than that of bonding ties. Unlike bonding ties, the bridging ties also influenced the perceived usefulness, but its effect was negative. This study found that the bridging ties had cubic relationships with perceived usefulness; that is, if directors depended excessively on bridging ties, their perceived usefulness did not necessarily increase. This may be due to the presence of information that was irrelevant to the CVB. In other words, excessive dependency of directors on bridging ties may have led to a lack of information related directly to destination marketing and promotion, and

thus they may have needed more time to make the information relevant to the purpose of their organization. For example, in the tourism industry, YouTube and interactive maps are heavily used while such technologies may not be highly ranked in other private businesses. Moreover, LinkedIn is frequently used in the private business context, but not in CVBs. Thus, although the purpose of Web 2.0 use is very similar in diverse industries, if the majority of information comes from an industry not closely related to destination marketing, some information may not be relevant to the organization's purpose, which in turn reduces the perception of usefulness. This negative aspect of bridging ties may provide one possible reason why bonding ties had a stronger effect on Web 2.0 adoption than bridging ties.

However, the unified model depicted a positive interaction of bridging ties with competency. This means that directors' strong reliance on bridging ties also positively influenced perceived usefulness if the directors strongly believed that their ties could give helpful information for their organization. In other words, the negative effect of bridging ties can be minimized by strong competency trust. This provides an important implication for CVBs. Because most CVBs are small-sized and have a limited number of employees, it may be indispensible for directors to rely on bridging ties to some extent. Therefore, it will be critical that directors not only build strong trust with their existing bridging ties but to also be aware of the existence of people in their region who have in-depth knowledge about Web 2.0 use. This suggestion is consistent with the study by Monge et al. (2008) in which they found that in and of itself, keeping diverse relationships does not guarantee an increase in farmers' technology adoption; knowing main promoters who were indicated as having in-depth knowledge about technology significantly increased the adoption of technology.

Competency Trust.

In contrast to the expectation, this study did not show that there was a significant direct relationship between competency trust and actual Web 2.0 adoption. However, it appeared that competency trust indirectly affected the level of actual use via perceived usefulness and perceived ease of use. When social capital was regressed on perceived usefulness and ease of use, the competency trust was the only factor of social capital having a significant influence on both perceptions. This may mean that competency trust played a primary role in facilitating information exchange. In other words, consistent with previous studies, the findings suggest that directors' higher trust in their tie's competency lowered their uncertainty and suspicion about new information, which in turn resulted in a higher acceptance of information provided from their ties.

One of the distinctive roles of trust was its moderating effect on perceptions. The data showed that stronger trust played important roles in enhancing the effects of social networks such as bridging and weaker ties on perceived usefulness. Acquiring non-redundant and large volumes of information was, no doubt, a primary benefit derived from directors' engagement in weak or bridging ties. However, trust-worthiness of information and its irrelevance to their organization may be disadvantages that such ties often have. However, the findings seem to suggest that strong trust in their ties minimized the disadvantage of weak and bridging ties. This was clearly proven from the positive interaction effect of trust and bridging ties on perceived usefulness that switched the negative effect of bridging ties to a positive one with strong competency trust.

Associational activity.

The findings showed that the high adoption group had a higher number of memberships

in associations. Directors' participation in associational activity was also significant in influencing the level of Web 2.0 use. These results may confirm that through participation in diverse associational activity, directors might increase chances to witness the business practices of Web 2.0 technologies in various ways and simultaneously gain different types of information related to Web 2.0.

One interesting finding is the direct effect of associational activity on perceived ease of use. In fact, its effect on perceived ease of use shows the unique property of Web 2.0 technology. Web 2.0 technologies are currently being used for not only business purposes but also individual ones. Among a variety of purposes, Web 2.0, especially social networking sites, is frequently used with the object of keeping relationships with members in organizations or associations. Thus, it is a common practice that many associational activities are organized by using social networking sites or online communities for information sharing among members. For this reason, having a higher number of memberships may mean higher chances for directors to have the first-hand experience in using or operating Web 2.0 technologies. In this study, social capital variables may not have shown their influence on the perceived ease of use because the directors were not directly involved in the implementation of Web 2.0 technologies. In this sense, directors' participation in associational activities can be considered as their personal hands-on effort to learn and experience Web 2.0, which then positively impacts both perceived ease of use and their organization's actual level of Web 2.0 adoption.

The benefit of associational activity related to network size also needs to be emphasized. Based on Information Ground Theory, this study posited that the primary benefit derived from directors' various memberships is spontaneous and serendipitous information sharing related to technology among members in a certain context. However, this study argues that participation in

diverse memberships means more than just spontaneous information gain. Besides information sharing, active participation in associations can also increase spontaneous and serendipitous chances to extend valuable social networks. This study did not investigate the causal relationship between network size and associational activity. However, a significant correlation between two variables in this study may lend weight to the plausible expectation that higher involvement in associational activity also provides directors with opportunities to build new relationships with helpful persons for Web 2.0 implementation or information gain, which in turn, extends their social networks.

Subjective norms.

Perhaps one of the most interesting findings is the multiple effects of subjective norms. As expected, the subjective norm displayed its direct effect on the actual level of Web 2.0 use. Interestingly, among significant social capital variables, the subjective norms had the smallest degree of direct effects on the actual level of Web 2.0 use. However, subjective norms showed the strongest effects on perceptions and attitudes about using Web 2.0. Based on the proposed research model, its effect on attitude toward using Web 2.0 outweighed the ones of perceived usefulness and ease of use. In contrast with existing research on TAM, perceived usefulness did not show its significant effect on attitude, which may be caused by a suppression effect of subjective norms. This study explained that the dominant effect of subjective norms might result from CVBs' early adoption stages where subjective norms usually exert their effects more strongly (Harwick & Barki, 1994: Morris & Venkatesh, 2000; Venkatesh & Davis, 2000). In the early stages, there is, in general, not sufficient information circulated about new technologies. This might lead directors to rely heavily on the Web 2.0 adoption-related opinions and

expectations from their important ties, and take them into consideration when forming their own personal opinions about the technology.

The results of the modified model in which the subjective norm was included in the group of social capital variables provided even more clear understanding about the property of subjective norms in the technology adoption process. Subjective norms did have significant effects on not only the attitude, but also the perceived usefulness and ease of use. This is interpreted to mean that as directors were strongly aware of social expectations (or pressure) about Web 2.0 adoption from their important referent groups, they may have put more personal effort into researching Web 2.0-related information and learning the practices of the technology.

In addition, in the study, travelers were included as an important referent group. An item to measure directors' awareness of subjective norms was "I feel these days travelers think CVBs (DMOs) should provide travel information through Web 2.0 technology." Thus, it is argued that being highly aware of travelers' needs related to Web 2.0 itself may mean that to some extent, they already perceived and admitted the usefulness of Web 2.0 to meet the needs of travelers, which in turn resulted in higher levels of perceived usefulness and ease of use.

5.3 Implications

This section discusses implications that this study draws based on the findings. The implications are divided into theoretical, methodological, and practical implications.

Theoretical implications.

This study introduced the concept of social capital as an important component that helps DMOs gain technology-related information and facilitates new technology adoption. Regardless

of topics, as the concept of social capital has not had sufficient attention from tourism scholars (Jeong, 2008; Jones, 2005; Okazaki, 2008), to our knowledge no one has tried to empirically assess the role of social capital in new technology adoption by not only DMOs, but also other tourism businesses. Taken as a whole, this study indicated that social capital can be an important asset for technology dissemination in the DMO context, which can possibly be adopted in other tourism contexts. Thus, it is believed that this study provided new ways of thinking about how social capital can be applied to and studied in the tourism context. Moreover, this study contributed to the advancement of knowledge in social capital and innovation studies by adding some unique findings related to social capital and technology adoption.

First, this study introduces the new argument in social capital and innovation studies that a certain type of tie (e.g., bonding or bridging tie) on which people largely rely for information gain does not necessarily mean that the tie has a stronger effect on knowledge gain and technology adoption than other ties. In this study, bridging ties were indicated most as being the primary tie for information gain by CVB directors, but the effect of bridging ties was not stronger on the actual level of technology adoption than bonding ties. This study suggests that future studies need to distinguish between two terms: *primary ties* on which people depend more for information gain, and *effective ties* that have stronger effects on innovation or technology adoption. The former one may provide a better understanding about the unique structure or characteristic of studied contexts related to social networks. For example, as mentioned, in the DMO context where most DMOs are small-to-medium sized with a limited number of employees, it might be indispensible that directors, to some degree, find important ties from outside organizations, which increase their dependency on bridging ties. Thus, if this study is conducted in relatively large organizational settings, the primary ties for information gain would

be different as they would be influenced by the unique nature of the study's context. In social capital research, the distinction of these ties is believed to provide more practical implications such as whether the current network structure in a certain context needs to be enhanced or changed for a certain goal (e.g., facilitating technology adoption).

One of the distinguished features of this study lies in the extension of the existing theoretical models, TAM and TRA, which were synthesized by taking into consideration the effects of social capital on technology adoption. The proposed research model strongly supports that subjective norms need to be considered when explaining organizational technology adoption. The addition of subjective norms produced a unique result which is largely inconsistent with TAM. This study found that in the context where the effect of subjective norms is strong, the effect of perceived usefulness and perceived ease of use on attitude toward using a certain technology can be diminished, which results in their non-significant effect. This was also supported by the modified model where perceived usefulness only showed a small effect. This study explained the result with the concept of the early adoption stage. However, it is very hard to locate previous studies that show not only the non-significant effect of perceive usefulness on the attitude toward using technology, but also the relatively small effect of it, while there are several studies that found perceived ease of use to be non-significant. For this reason, further studies are needed to understand whether the result is due to the unique characteristics of DMOs or the unique characteristics of Web 2.0 technologies, or the combination of both factors.

In addition, the integration of social capital into technology adoption processes enabled this research to investigate not only the direct effect of social capital, but also its indirect effect on technology adoption. This may provide an important implication for social capital and innovation-related studies. To the best of our knowledge, most studies have focused mainly on

the direct effects of social capital on individuals or organizational innovation. One of the limitations of such studies is the limited evidence to provide in-depth explanations for some non-significant variables of social capital in influencing technology adoption. Thus, these variables are often treated as less important variables in the context of the study. However, this study showed that even though some social capital variables do not have significant effects on the actual level of use, they were contributing to technology adoption in different ways. In this regard, it may be suggested that extended research models that include social capital can be employed for a better understanding of technology adoption.

This study also makes new contributions to the knowledge of social capital-innovation studies in terms of the different role social capital plays inn technology adoption. As mentioned in the literature section, social capital is often divided into structural and relational dimensions. The former often refers to network configuration or the characteristics of social ties, and the latter one includes norms and trust shared with networked members. Overall, the findings of the study imply that so-called structural dimensions which focus mainly on social networks variables (e.g., bonding and bridging ties) have more power in directly increasing the level of technology adoption while the relational characteristics (e.g., trust and subjective norms) exert stronger effects on influencing a person's perceptions and attitudes related to technology adoption. Thus, this suggests that there may be a sequential process in technology adoption. That is, relational factors may be heavily involved in the stage of forming perceptions and attitudes related to technology, and then structural dimensions may play an important role in helping the changed perceptions and attitudes about technology facilitate the actual adoption of the technology.

Methodological implications.

This study clearly distinguished the difference in social ties based on the tie's strength (stronger or weaker ties) and externality (bonding and bridging ties), which have often been used interchangeably in many social-capital related studies. It turned out that the distinction of ties was meaningful in that this study found that each tie had a different degree of effect on technology adoption, and some had unique effects with other social capital variables (e.g., weaker tie with strong trust) on the technology adoption process. As several scholars (e.g., Hansen, 1999; Williams, 2005; Zheng, 2010) have pointed out, the interchangeable use of strong/bonding ties and weak/bridging ties often leads to misunderstanding and unclear descriptions about the property or characteristics of ties with which actors interact, which has resulted in the discrepancy of findings related to the effect of types of social networks on innovation or technology adoption. In this sense, this study provides a methodological way to distinguish social ties and test their different effects on individuals' or organizational innovation.

Moreover, the investigation of trust with these ties provided more in-depth understanding about the characteristics of ties. That is, the characteristics of social ties are distinct from the existence of strong trust. One unique finding is that this study is able to not only confirm the importance of the so-called *trusted weak ties* proposed by Levin and Cross (2004), but also introduce the new term *trusted bridging ties*, and both had a significant influence on CVB directors' perceived usefulness related to Web 2.0 technology. Therefore, this study joins Adler and Kwon (2002) and Levin and Cross in calling for future works to place more emphasis on trust and different types of social networks, which is expected to enable further specificity about the nature of social ties work with innovation and technology adoption.

Lastly, it is worthwhile to note that the use of personal network analysis was a useful

technique to understand the characteristics of directors' social networks from which important information about new technologies is usually gained. The personal network technique is not a new method. However, given that there has not been sufficient social capital research in the tourism context, this study may contribute to providing a basis for measuring individuals' social capital, understanding the characteristics of their social networks, and then testing the effects of different types of networks. Thus, not confined to the topic of DMO technology use, the network analysis method used in this study may be applicable to diverse tourism-related topics.

Practical implications.

The results of this study are also believed to hold significant practical implications. Before discussing several implications in detail, DMOs need to recognize that implementation of Web 2.0 technology to a certain degree relies on utilization of informal social networks. Undoubtedly, the so-called tangible assets such as annual budget and number of employees may exert a stronger influence on the level of technology adoption. However, because the decision about such assets is usually made by the policy of DMOs at the state or regional level (e.g., Illinois Tourism Development Office), it may be beyond the actual ability of locally-based small CVBs to suddenly increase these assets. In addition, many tourism studies that explored the adoption of new technology (e.g., ICTs) by not only DMOs but also tourism businesses, have often suggested building formal education systems to increase employees' knowledge about new technology. However, the limited financial resources prohibit small CVBs from having their own educational programs. Thus, as will be discussed in the following, designing and providing educational opportunities may be more effectively carried out by DMOs at the state or regional level. This may imply that there have not been sufficient or size-appropriate suggestions that can

be individually implemented by such small CVBs for facilitating new technology adoption.

In this sense, this study provides meaningful implications for small-to-medium sized DMOs that each individual CVB can actually utilize for maintaining or enhancing their competitiveness related to the use of new technology by increasing the opportunities for social interactions. More importantly, even though this study only surveyed directors of CVBs, the implications made in this study should not be considered viable only for CVB directors, but the CVB as a whole. In other words, it is believed that increasing social capital of employees in a DMO also positively influences the level of new technology adoption. Specific implications are discussed below.

First of all, the significance of associational activity needs to be re-emphasized. The results clearly indicated that directors' active participation in associational activity influenced perceived ease of use and the level of Web 2.0 adoption. Associational activity in this study was not confined to that related to one's job; that is, their personal memberships were also included in the total number of associational activities. Thus, increasing their participation in diverse organizations can be performed outside the work environment and in their normal life. This may mean that associational activity is one of the factors that directors can increase with their own effort. Therefore, it is critical that directors recognize that memberships in diverse activities can actually significantly influence the technology adoption within their own organization.

As a way to effectively increase involvement in associational activity, this study particularly suggests participating actively in online-based memberships, which is expected to provide multiple benefits. Social relationships are not necessarily built based on face-to-face meetings. In particular, with the advent of Web 2.0 technologies, there have been numerous online-based associations or memberships that are based on a variety of topics (e.g., travel,

social media, art, etc.). Due to a wide range of possible memberships, it may not be difficult to find certain associational activities that DMO employees are interested in. Moreover, as such online-based memberships are not constrained by geographical region and time, it is relatively easy to join them in comparison to off-line based associational activities. In particular, there are various types of travel-related professional memberships such as Travel 2.0, and the Travel, Tourism and Hospitality Group on LinkedIn. Such memberships can provide not only information directly related to but also opportunities to learn practical ways to implement Web 2.0 technology.

Similarly, enhancing involvement in travel-related memberships (not professional- based) has another important implication for higher awareness of subjective norms. Subjective norms showed a strong influence on not only forming positive perceived usefulness and ease of use but also attitude toward using Web 2.0. In this study, one of the items used to measure the degree of subjective norms was about social pressure from potential travelers: "I feel these days travelers think DMOs should provide travel information through Web 2.0 technology". Thus, undoubtedly, building direct social relationships with potential travelers may be an effective way to increase the awareness of travelers' needs and expectations related to Web 2.0. Fortunately, as Web 2.0 has produced a variety of travel-related online communities (e.g., CouchSurfing), it became relatively easy for DMOs to find platforms where potential travelers interact with each other in various ways. Thus, DMOs need to encourage active participation by their employees in such travel-related online communities as a traveler and not as a destination market. Through the interactions with fellow travelers, DMO employees may be more informed about the way travelers use Web 2.0 for travel information, and this then increases the awareness of subjective norms related to travelers.

Second, DMOs need to enhance their internal communication among employees. The findings related to bonding ties showed that they exerted the strongest impact on technology adoption. This suggests that information gain from persons working at the same organization as well as other CVBs was very effective in CVBs' technology adoption. However, bonding ties did not show any significant effects on perceptions related to technology use. This study interpreted this as being due to the existence of employees who were in charge of Web marketing. That is, strong reliance on them may cause directors and their employees in the same organization to rely on other's and spend less time learning and exploring the usefulness of the technology for themselves. In the long run this may mean that the organization's knowledge about this technology is limited to a handful of influential technical staff. As indicated, Web 2.0 consists of a variety of technologies, and it may be impossible for a single person to have in-depth knowledge about all Web 2.0 technologies. It is very possible that each employee may also gain technology-related information from their own ties.

Thus, to maximize the effect of bonding ties, DMOs need to facilitate their employees' involvement in Web 2.0-related marketing which in turn leads to active information sharing among employees. This can be done simply by holding regular meetings with employees about Web 2.0 use, but this study particularly suggests sharing Web 2.0-related work among employees. As a good example, this study introduces the strategy used by a CVB director to encourage employees' active involvement in Web 2.0 marketing, who also participated in the pre-test of this study. The CVB had seven employees, and the level of Web 2.0 use was generally high (eight Web 2.0 technologies adopted). To increase employees' involvement in Web 2.0-related marketing, the director had every employee look for, post, and update useful content on the Web 2.0 platform (e.g., Facebook and Twitter) on a regular basis, instead of designating only certain

employees to be in charge of these tasks. The strategy may not only provide timely destination information for travelers (as more employees are involved in providing destination information), but also positively increase the overall knowledge and perceptions of employees about Web 2.0, which is believed to enhance the effect of bonding ties on Web 2.0 use.

With regard to bonding ties with people at other CVBs, it seems that Web 2.0 adoption by similar organizations, that is, by other CVBs, played an important role in encouraging technology adoption. In this sense, it would be an effective and easy strategy for CVBs to make a list of several other CVBs that usually implement new technologies to a relatively large degree, and to explore their official websites on a regular basis. This may enable them to keep up with helpful practices directly related to new technologies and destination marketing and promotion.

Third, besides these individual efforts, DMOs at the regional or state level can also help CVB employees increase their social capital by organizing regional technology-related meetings or workshops. Conducting these educational opportunities should be done by DMOs at regional or state levels, as it may be impossible for many small CVBs to organize the workshops due to limited budgets and resources. It is expected that technology-related workshops will have multiple advantages related to the findings of this study. First, there is no doubt that it will provide CVB employees with opportunities to learn new technology. However, the workshop will have more than just educational benefits. Second, it will provide them with chances to extend their social networks. As not only CVBs but also tourism-related businesses participate in the workshops, it can help CVB employees enhance their engagement in either bonding or bridging ties. Third, consistent with the concept of an information ground, it is also expected that participants will share diverse information about useful memberships that they are involved in. Lastly, it will also be a chance for CVB employees to know and communicate with persons in

their region (e.g., instructors of the workshop) who they can trust regarding technology-related knowledge. As previously mentioned, this study emphasizes that being aware of the existence of people who have in-depth knowledge about new technology, and having relationships with them is especially important for a higher level of perceptions about Web 2.0 technology. In this sense, the workshops may play an important role as a platform where DMOs can share information about trusted persons in their region with regard to new technology.

Fourth, the implementation of an online community will be another useful practice that DMOs at the state level can utilize to facilitate information sharing and provide network opportunities in their region. This means the use of Web 2.0 not just for travelers but also for DMO members. The strength of the online community lies in its ability to bring large numbers of people together in the same (online) place. That is, it enables the grouping of large numbers of bonding and bridging ties. For example, recently Chicago's North Shore CVB began using LinkedIn, one of the popular social networking sites, where not only CVB members but also local businesses in their region are sharing a wide range of information. More importantly, members often have formal and informal meetings together. Another example is Social CVBs, which is a community network within LinkedIn. In this community, members share social media-related information and strategies especially for CVBs. Such an online community is providing not only useful information, but also opportunities to extend social networks. More importantly, this online community will also enable CVB members to actually be involved in using Web 2.0 technology, which may strongly influence the perceived usefulness and ease of use.

As this study emphasizes the importance of social interactions in information gain and facilitating new technology adoption, the practical implications focus primarily on the ways to

increase chances for DMOs to extend their social networks. As discussed, it can be achieved by cooperative efforts from the tourism organizations at local and regional or state levels.

5.4 Conclusion, Study Limitations and Directions for Future Research

The purpose of this study was to assess the role of social capital on the adoption of new technologies by DMOs. As just reviewed, this study provided strong evidence that social capital plays a critical role in technology adoption in the tourism context. As this study distinguished the direct and indirect effects of social capital on technology adoption, the present study is believed to significantly contribute to the advancement of knowledge in innovation and social capital-related literature. However, this study also has several limitations.

First, this study only surveyed directors of DMOs. However, the findings imply that there might be another persons (e.g., marketing director of an organization) whose opinions are more influential in making the decision to adopt Web-related technology. Thus, the actual level of use by some organizations might be heavily affected by that person's social networks rather than those of the directors. In addition, although directors are often considered final decision makers for technology adoption, their decision is likely to be made by taking into consideration the opinions of their employees. For this reason, it would be a possible expectation that the social capital that employees in an organization have might also influence the level of technology adoption. Thus, for the future, it is worthwhile to conduct a study that examines the relationship between social capital of employees in different DMOs or other tourism-related organizations and the level of technology adoption by the organization. Such a study would provide information about which social capital (individual, especially final decision makers versus organizational social capital) can better explain the organizational technology adoption.

Second, this study focused only on the positive aspects of Web 2.0 technology. The study assumed that only positive opinions and information about Web 2.0 are gained from directors' social ties. That is, the study did not also take into consideration the negative aspects of Web 2.0 technology. However, it is very possible that given that all Web 2.0 technologies cannot be perfectly suitable for either DMOs or other businesses, some important persons may have influenced directors to form negative impressions about Web 2.0, which may have decreased the number of technologies adopted. In fact, the design of the present study could not capture the effects of those persons. It cannot be said that negative information about new technology from social ties is not useful. The negative opinions about Web 2.0 are still valuable, and in some cases, may bring about positive effects for a directors' organization. Thus, for future study, to better understand the effects of social networks on new technology adoption, it would be helpful for a study to investigate the opinions or beliefs that networked persons hold about using Web 2.0 for organizations as well (e.g., how strongly this person believes in the usefulness of Web 2.0).

Third, this study measured the level of Web 2.0 use by the numbers of Web 2.0 technologies adopted by a DMO. That is, the level of actual use and the level of adoption were treated the same as the number of Web 2.0 technologies adopted. However, the number of technologies adopted may not fully represent the degree of actual use. In other words, it provides little information about how actively each Web 2.0 technology adopted is being used. For example, there are many organizations that set up Twitter, Facebook, and YouTube accounts for marketing, but content is rarely updated on them. In cases like these, simply implementing or adopting more Web 2.0 technologies does not necessarily mean that the organization is effectively or actively using Web 2.0 technologies. It is also possible that directors highly

perceived the usefulness of Web 2.0, and based on their in-depth investigation of Web 2.0, they made a decision to adopt only two or three Web 2.0 technologies, which are considered especially useful for their organization. In such a case, saying that their level of Web 2.0 use is rather low may be problematic. Therefore, for future study, it is strongly recommended that the actual level of Web 2.0 use be measured in other ways, such as the amount of time spent updating content or the frequency of updates in Web 2.0 platforms. More importantly, once the level of Web 2.0 adoption by DMOs reaches a certain level, where the DMOs in general use a much higher number of Web 2.0 technologies, the number itself may not be a useful tool in distinguishing the different level of DMOs' Web 2.0 use.

Fourth, the multicollinearity problem needs to be mentioned. In this study, because the ties were divided into bonding and bridging, a relatively high correlation between bonding and bridging ties was found. Fortunately, despite rather high correlation, the data did not violate the assumption of no multicollinearity within the conventional standards. However, it is definitely a limitation of this study given that the statistics to assess the multicollinearity problem were very close to the standard cut lines. This may mean that if this method is repeated or used in other populations, that of another tourism context instead of a DMO, multicollinearity could be a problem. Therefore, for future study, more specific types of social ties need to be developed. In other words, bonding ties in this study only had two different types (a person working at same organization and at other CVBs), but if the tie is divided into three or more types, the multicollinearity issue could be improved. For example, bonding ties may include persons working at a) the same organization b) other CVBs in the same region, and c) other CVBs in different regions.

Fifth, although this study obtained a modest R^2 (0.35 for direct effect of social capital

on the level of Web 2.0 adoption), this suggests that there are still other factors that can improve the explanatory power of social capital for organizational technology adoption. In addition, TAM-related variables produced relatively lower R^2 compared to other studies based on TAM. This may be because this study focused on organizational technology adoption which may be affected not only by the director's decision but also by the opinions of other employees. Therefore, the proposed or modified model needs to be applied to an individual's technology adoption (e.g., travelers' adoption of the mobile phone as an information source). This study may even strongly support the role of social capital and the applicability of the proposed research model to the tourism and hospitality context.

Finally, it is worthwhile to note a methodological limitation. This study mainly utilized a quantitative approach, and the approach enabled the study to successfully identify influential ties and the different effects of each tie on technology adoption. However, social relations are formed in various contexts and situations. If certain types of social ties are critical for a DMO's technology adoption, knowing how the ties began, developed, and were maintained may be equally important and provide other important information. It may be possible to capture these processes by employing a qualitative method rather than a quantitative approach. Thus, for future research, it is suggested that a qualitative study be conducted to not only follow up and confirm the findings of this study, but also understand the context where social capital is formed and developed.

These future studies can, it is hoped, produce a better understanding about the role of social capital in technology dissemination and improve the research model that has been presented here.

Concluding thoughts.

Tourism takes place in a geographical area where a set of tourism businesses and tourists interact and intervene in the tourism activities. Thus, a tourism destination is often described as possessing a relational network between travelers and tourism businesses. Thus, social interactions in the tourism context are particularly important for tourism studies. In this sense, not confined to innovation studies, it is believed that this study makes a significant contribution in understanding the importance of social interactions in the tourism context and in providing future directions for social capital studies in the tourism and hospitality context.

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APPENDIX A: QUESTIONNAIRE

SECTION 1

1.1 Please tell us about your organization by answering the following questions:

a) Is your organization operated at the:
____ City level ? ____ County level? ____ Region level? or ____ Region level?

b) How many full-time equivalents (FTEs) does your organization have? _____ FTEs

c) How much is the annual budget of your organization? $_____ dollars

SECTION 2

In the following section, you will be asked a series of questions about a) actual use of Web 2.0 technology for your organization, and b) your social networks that help you gain Web (or Web 2.0) technology-related information.

"Web 2.0 technology often represented by social media, social networking sites, and user-generated content (UGC)".

For your better understanding about Web 2.0 technology, please see some examples of Web 2.0 technology below:

- **Social Media:**
  - Social networking sites: **Facebook, Twitter, MySpace, Linkdin, etc.**
  - Media sharing: **YouTube, Flickr, Picasa, SmugMug, etc.**
  - Collaborative/open source: **Blog, TripAdvisor, Yelp, etc.**
  - Interactive Maps: **Google map, Yahoo map, Bing map, etc.**
- **Other applications: Podcast, RSS feed, SHARE, Mobile applications, etc.**

2.1 Actual use

a) Please indicate the degree to which your organization is currently using Web 2.0 technologies for destination marketing and promotion.

	Rarely used----------			Often ----------			Frequently used	NOT USED
Facebook	①	②	③	④	⑤	⑥	⑦	NOT USED
Twitter	①	②	③	④	⑤	⑥	⑦	NOT USED
YouTube	①	②	③	④	⑤	⑥	⑦	NOT USED
Flickr	①	②	③	④	⑤	⑥	⑦	NOT USED
Blog	①	②	③	④	⑤	⑥	⑦	NOT USED
MySpace	①	②	③	④	⑤	⑥	⑦	NOT USED
Podcast	①	②	③	④	⑤	⑥	⑦	NOT USED
Others:	①	②	③	④	⑤	⑥	⑦	NOT USED

b) Please check (√) all Web 2.0 technologies that your organization is currently using Web 2.0 technologies for destination marketing and promotion.

_____ Interactive Maps such as Google, Yahoo, or Bing maps
_____ RSS feed
_____ TripAdvisor
_____ LinkedIn
_____ Mobile Applications (e.g., using mobile networking apps to interact with fans; creating custom apps and optimizing our website for mobile apps)

c) Please write down any Web 2.0 technologies that your organization is currently using but not listed above.

_____

2.2 Social Networks

In this section, you will be asked a series of questions about your social networks.

"The following two questions are the most important for this study. Please read each question carefully and take some time before you answer".

a) Please indicate the number of persons from whom you have gained important new technology-related information including Web 2.0 technology within the last year.

- They can be anyone (e.g., your employees, friends, people working at other CVBs or in other industry, etc.)
- Please take time to recall the persons

Number of Persons:_____.

b) Among them, please choose four most helpful or influential persons from whom you gained technology-related information or information for implementing it in your organization.

- Please write their first names or initials and remember the order.

① _____ ②_____ ③_____ ④_____ .

In following section, you will be asked about the **FOUR persons** that you indicated in the previous section.

2.3 Following questions are about the FIRST person you indicated.

a) Which one best describes the relationship with the first person:
___ a friend ___ an acquaintance ___ a co-worker ___ a family member or relative

b) Please answer following questions

Description	Yes	No
Have you invited the person to your home or has the person invited you to his/hers?		
Do you see the person at least once every two weeks?		
Does the person live in same city (or county) as you?		

c) Please check **only one** of the statements that best describes that person's job:
(DMO: Destination Marketing Organization, CVB: Convention and Visitors Bureau)

	The person is an employee working at my organization.
	The person works at other CVBs or DMOs, not my organization.
	The person works in the tourism industry (e.g., hotel, travel agency, museum, etc), but not CVBs or DMOs
	The person works in other industries (including research or educational institutions) not the tourism industry
	Currently , the person does not have a job

d) Please indicate the degree of your trust in the person's competency.

	Strongly disagree----------Neither----------Strongly agree						
I trust the person's competency in technology-related knowledge.	①	②	③	④	⑤	⑥	⑦
I believe that the person approaches his or her job with professionalism and dedication to technology.	①	②	③	④	⑤	⑥	⑦
I trust that the person can provide helpful suggestions of Web 2.0 technology for my organization.	①	②	③	④	⑤	⑥	⑦

2.4 Following questions are about SECOND person that you indicated.

- Questions in 2.3 are repeated.

.

2.5 Following questions are about THIRD person that you indicated.

- Questions in 2.3 are repeated.

.

2.6 Following questions are about FOURTH person that you indicated.

- Questions 2.3 are repeated.

.

2.7 Associational Activity

a) How many memberships in other organizations do you currently have?

- Number of tourism related-memberships that you personally have: _____
- Number of non-tourism-related memberships that you personally have (non-work-related memberships can be included such as US tennis association): _____

SECTION 3

In this section, you will be asked about your perceptions and attitude related to using Web 2.0 technologies for your organization.

3.1 This set of questions is about perceived usefulness of Web 2.0 technology for your organization. Please indicate (√) your level of agreement with the following statements.

		Strongly disagree----------Neither----------Strongly agree						
Using Web 2.0 technology improves my organization's performance.	No Idea	①	②	③	④	⑤	⑥	⑦
Using Web 2.0 technology enhances the effectiveness of destination marketing and promotion	No Idea	①	②	③	④	⑤	⑥	⑦
Using Web 2.0 technology makes it easier to do my organization's work	No Idea	①	②	③	④	⑤	⑥	⑦
Overall, I found Web 2.0 technology useful for my organization.	No Idea	①	②	③	④	⑤	⑥	⑦

3.2 This set of questions is about perceived ease of use of Web 2.0 technology for your organization. Please indicate (√) your level of agreement with the following statements.

		Strongly disagree----------Neither----------Strongly agree						
I find Web 2.0 technology cumbersome to use for my organization	No Idea	①	②	③	④	⑤	⑥	⑦
Learning to operate Web 2.0 technology for my organization is easy	No Idea	①	②	③	④	⑤	⑥	⑦
Web 2.0 technology is rigid and inflexible to interact with	No Idea	①	②	③	④	⑤	⑥	⑦
Overall, I find Web 2.0 technology easy to use.	No Idea	①	②	③	④	⑤	⑥	⑦

3.3 Please indicate (√) your level of agreement with the following statements.

		Strongly disagree----------Neither----------Strongly agree						
I feel these days travelers think CVBs (DMOs) should provide travel information through Web 2.0 technology (e.g., Facebook, interactive maps, YouTube, etc).	No Idea	①	②	③	④	⑤	⑥	⑦
People who influence my behavior at work think that a CVB (DMO) should use Web 2.0 technology for destination marketing and promotion.	No Idea	①	②	③	④	⑤	⑥	⑦
Most people who are important to me in relation to my work think that a CVB (DMO) should adopt Web 2.0 technology for destination marketing and promotion.	No Idea	①	②	③	④	⑤	⑥	⑦

3.4 Please check (√) overall evaluation of Web 2.0 technology.

All things considered, using Web 2.0 technology for my organization is a _____ practice.

a)

Bad								Good
	extremely	quite	slightly	neither	slightly	quite	extremely	

b)

Harmful								Beneficial
	extremely	quite	slightly	neither	slightly	quite	extremely	

c)

Foolish								Wise
	extremely	quite	slightly	neither	slightly	quite	extremely	

d)

Negative								Positive
	extremely	quite	slightly	neither	slightly	quite	extremely	

3.5 Please indicate (√) how likely you intend to use Web 2.0 technology for your organization.

	Extremely unlikely----------Neither----------Extremely likely						
I intend to increase the number of use of (or to adopt) Web 2.0 technology for destination marketing and promotion.	①	②	③	④	⑤	⑥	⑦
I intend to enhance Web 2.0-related marketing and promotion.	①	②	③	④	⑤	⑥	⑦
I intend to increase budgets (including human resources wages) for Web 2.0-related marketing and promotion in the next 12 months.	①	②	③	④	⑤	⑥	⑦

SECTION 4

Please tell us about **yourself** by answering the following questions:

4.1 Are you? ____Male ____ Female

4.2 In what year were you born? 19_____

4.3 Please check (√) the highest level of formal education attained (years).

_____ High school/GED
_____ Some college
_____ 4-year college degree
_____ Master's degree
_____ Doctoral degree

4.4 Please tell us about your work experience.

- How long have you worked in the tourism industry? _____ year(s)
- How long have you worked in your current organization? _____ year(s)

Thank you for taking participation in this study!
Please click on "Next" below if you would like to receive a summary of results and to be included in a raffle to win one of three Apple iPads. The information you enter will be stored separately from your responses to the survey, thus preserving your anonymity.

"Next"

Please provide your name and e-mail address that will be also used to send the summary of the results.

Your Name:
Name of Organization:
E-mail:

APPENDIX B: INVITATION LETTER

UNIVERSITY OF ILLINOIS
Department Of Recreation, Sport, and Tourism

CVBs' Technology Use Survey

Dear CVB's manager

You are invited to participate in a study for the purpose of obtaining a better understanding about the importance of social networks in facilitating Web technology use of destination marketing organizations (DMO or CVB).This questionnaire asks you about various aspects of your social networks and perceptions about using Web technologies for your organization. You should be the manager or director of your organization. If you are not, please let that person respond to this survey.

There are two ways that you benefit from participating in this survey. First, once you complete this survey, you will have the option to provide your name and e-mail address to receive the summary of results and to be eligible to win one of three iPads. Second, it is hoped that the findings will help tourism development professionals to better plan strategies to promote new technology use among destination marketing organizations like yours.

Your participation in this study is voluntary and you have the right to withdraw at any point. There is no right or wrong answer in this survey and only your personal opinion is considered. You will remain completely anonymous. All of your answers will be kept strictly confidential and will be used in combined statistical form.

It will only take you about 8 to 12 minutes to complete. Please read carefully the directions at the beginning of each part, and answer all the questions as accurately as possible. Your prompt response and comments are important and will be greatly appreciated.

If you are interested in reviewing an executive summary report of this survey later, please participate in the survey and leave your e-mail address at the last question.

If you would like to participate, please click on the link below.
"Click this Link"

If you have any question, feel free to contact with us via email (blee37@illinois.edu)

Thank you for your time.

Project investigator : Bruce E. Wicks Ph.D
Associate Professor

Investigator : Byeong Cheol Lee
Ph. D Candidate

APPENDIX C: INFORMED CONSENT LETTER

Dear CVB manager:

My name is Byeong Cheol Lee. I am a Graduate student at the University of Illinois working under the direction of Dr. Bruce E. Wicks in the Department of Recreation, Sport and Tourism.

I am conducting a survey for a research project in order to investigate the impacts of social networks on new Web technology adoption by convention and visitor bureau's (CVBs) or destination marketing organizations (DMO). I really appreciate you taking the time to share your experiences and perspectives with me.

By participating in this survey, you would have an opportunity to reflect upon your personal sources of technology-related information and perceptions about adopting Web technologies for your organization. Your responses will help us understand the role of social networks in gaining and sharing technology-related information. More importantly, your opinion could be fundamental information to suggest and develop tourism policy for improving and facilitating the CVB's use of new Web technologies for destination marketing and promotion.

This survey consists of four different sections in relation to various aspects of your social networks and perceptions about using new Web technologies for your organization. It would take you about 8-12 minutes, and it does not require in-depth knowledge about new Web technologies to complete.

Your participation in this project is completely voluntary and there is no penalty for choosing not to participate. Furthermore, you are free to withdraw from this survey at anytime and for any reason. You do not have to answer any questions you do not wish to answer. If you want to withdraw your consent or discontinue participation in this survey, you could do that by clicking the link "Exit this survey" on the upper-right side of screen. You can also skip the uncomfortable question by leaving it as blank or clicking the button "next" at the end of page.

All information collected would be kept confidential. The only people who will have access to the information are the people working on the project (Dr. Bruce E. Wicks and Byeong Cheol Lee). The data would be kept for 3 years by federal regulations.

The results of this research will be disseminated to researchers in the field of tourism via Byeong Cheol's doctoral dissertation, conference presentations, potential journal articles or book chapters. If you would like to receive a summary of the results or if you have any questions or comments, please contact me or Dr. Wicks at _____

Bruce E. Wicks
Associate Professor
Phone (217) 333-6160, E-mail (bew@Illinois.edu)

Byeong Cheol Lee
Ph. D Candidate

Phone (217) 722-6083, E-mail (blee37@Illinois.edu)

If you have any further questions regarding your rights as a project participant you may contact University of Illinois Institutional Review Board at (217) 333-2670 (collect) or by email at (irb@uiuc.edu.) The Institutional Review Board is the office at the University of Illinois responsible for protecting the rights of human subjects involved in studies conducted by University of Illinois researchers.

I sincerely thank you for your help with this study.

By hitting the "Next" button below, you indicate that you have read the consent and agree to participate in the survey. You should print a copy of the consent for your files. (click "file" on the top menu, then choose "print")